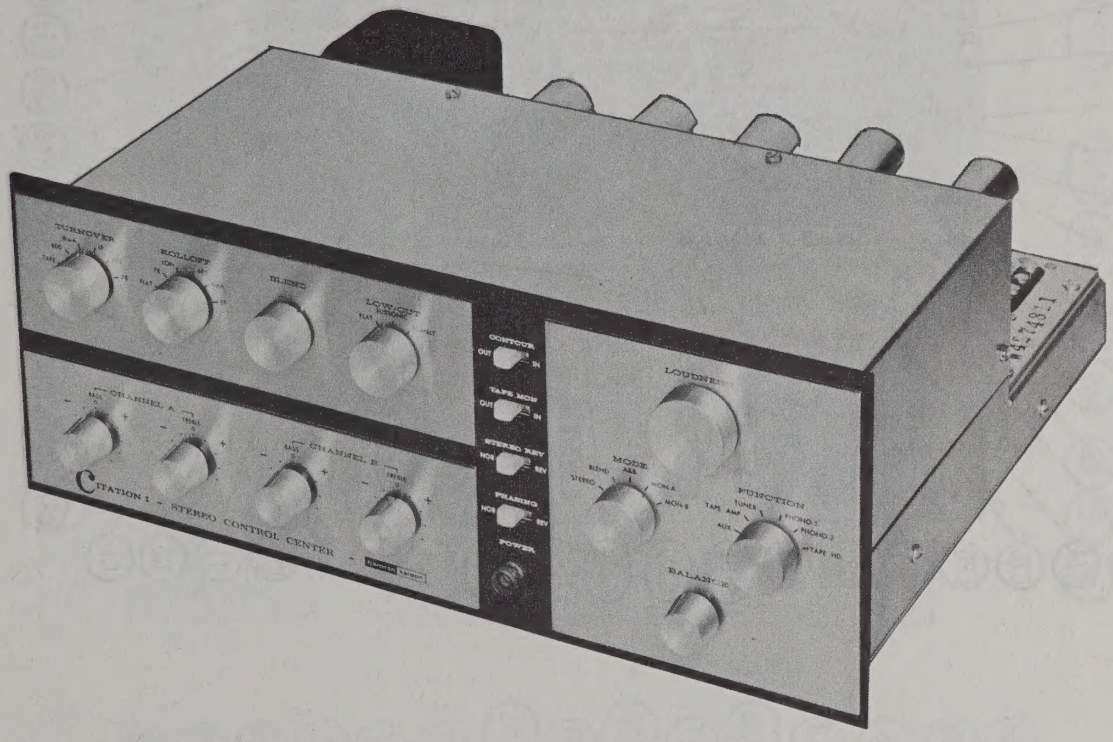
PHOTOFACT® Folder

# HARMAN-KARDON
# MODEL CITATION I

HARMAN-KARDON
MODEL CITATION I



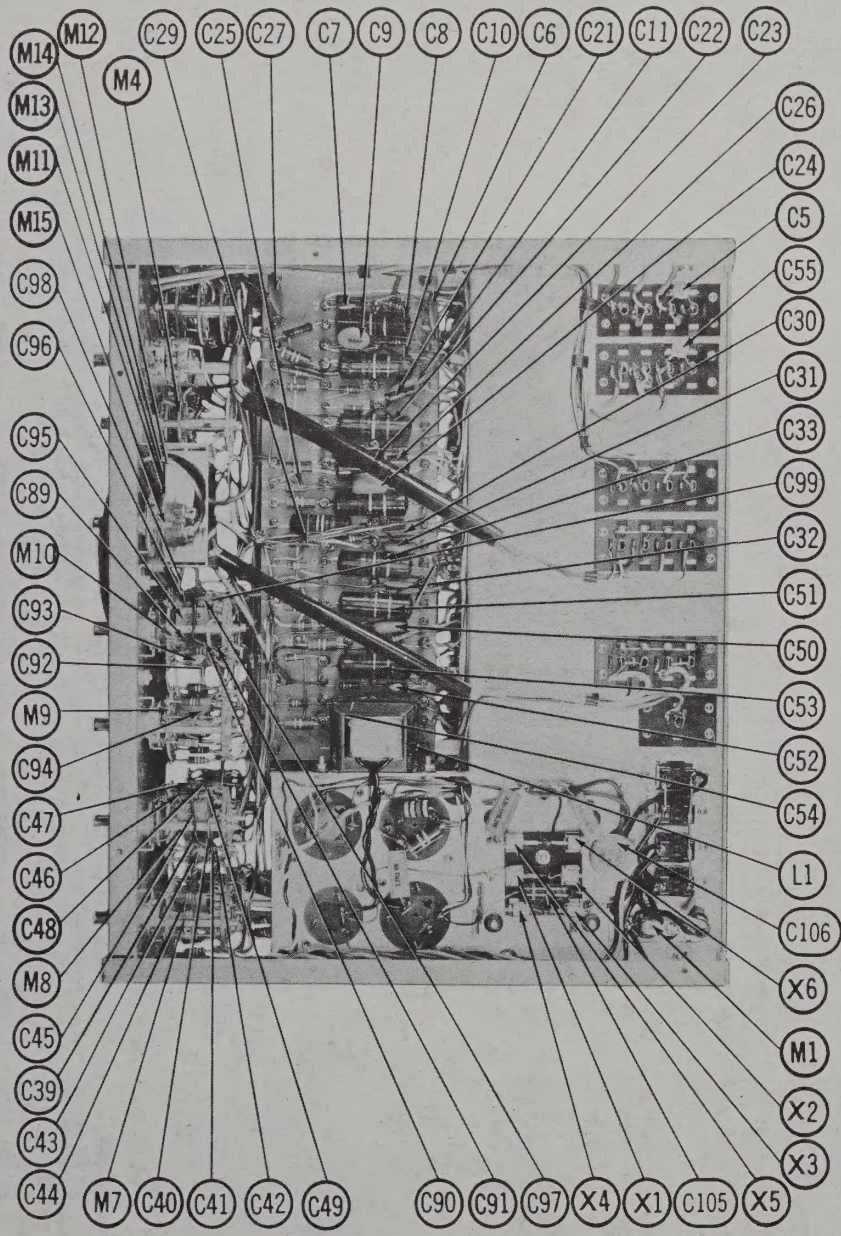

HARMAN-KARDON
MODEL CITATION I

| | |
|---|---|
| TRADE NAME | Harman-Kardon Model Citation I |
| MANUFACTURER | Harman-Kardon, Inc., Ames Court, Plainview L. I., N. Y. |
| TYPE SET | AC Operated 9 Tube Stereo Preamplifier |
| POWER SUPPLY | 105 – 125 Volts AC, 50-60 Cycles RATING 36 Watts, .36 Amp. @117 Volts AC |

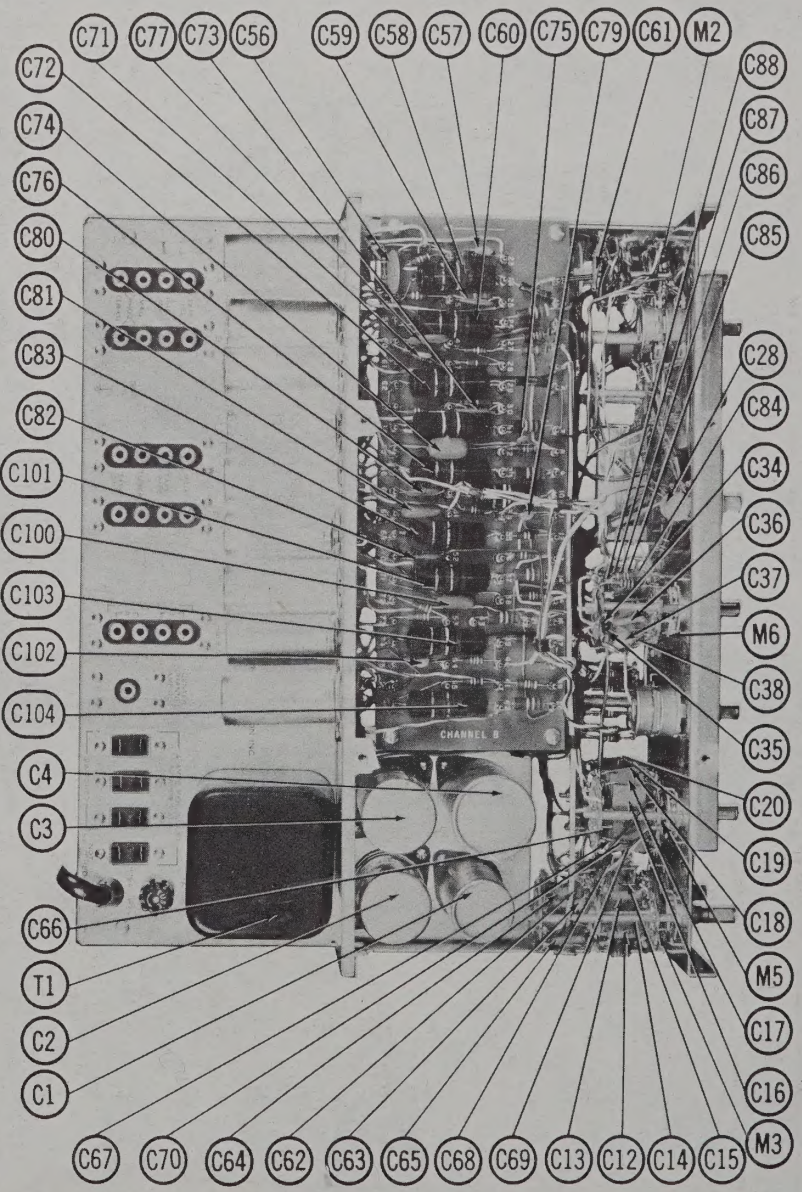
**HOWARD W. SAMS & CO., INC.** Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1962 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

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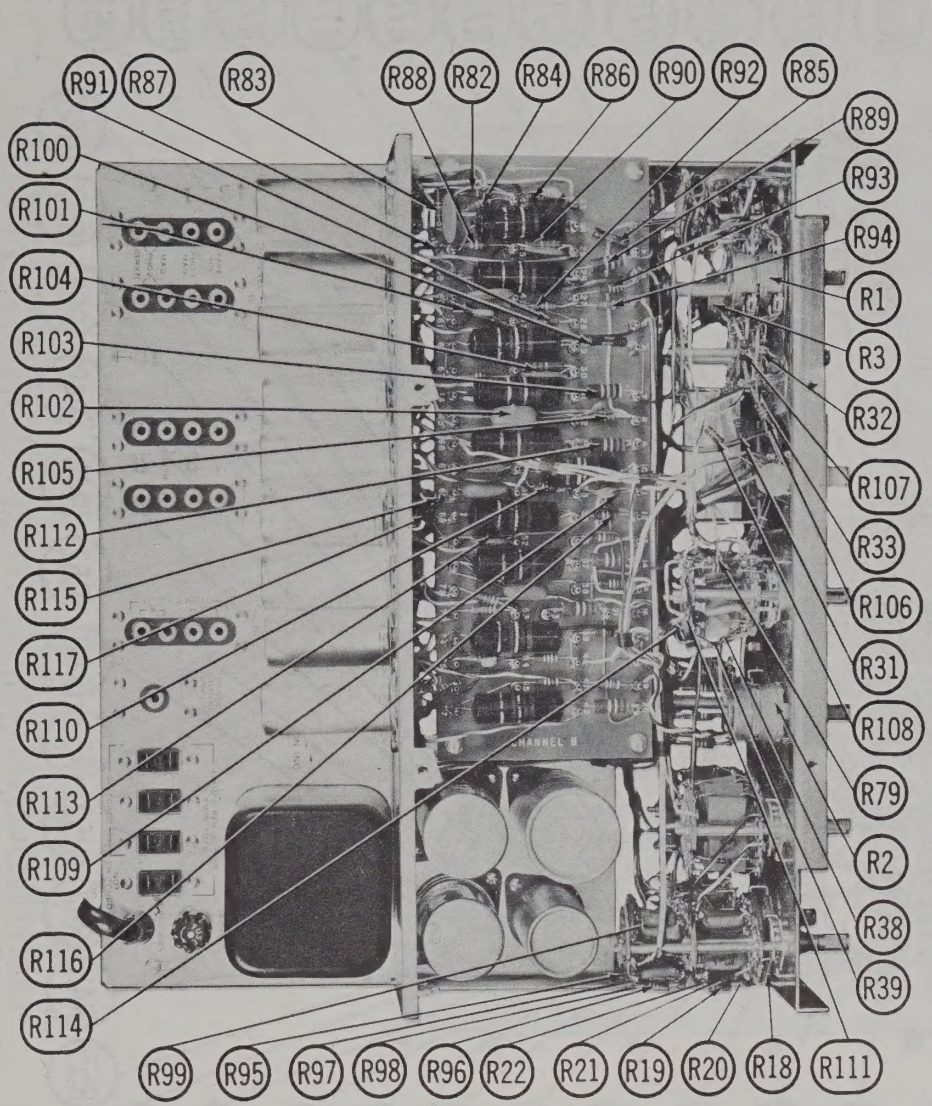


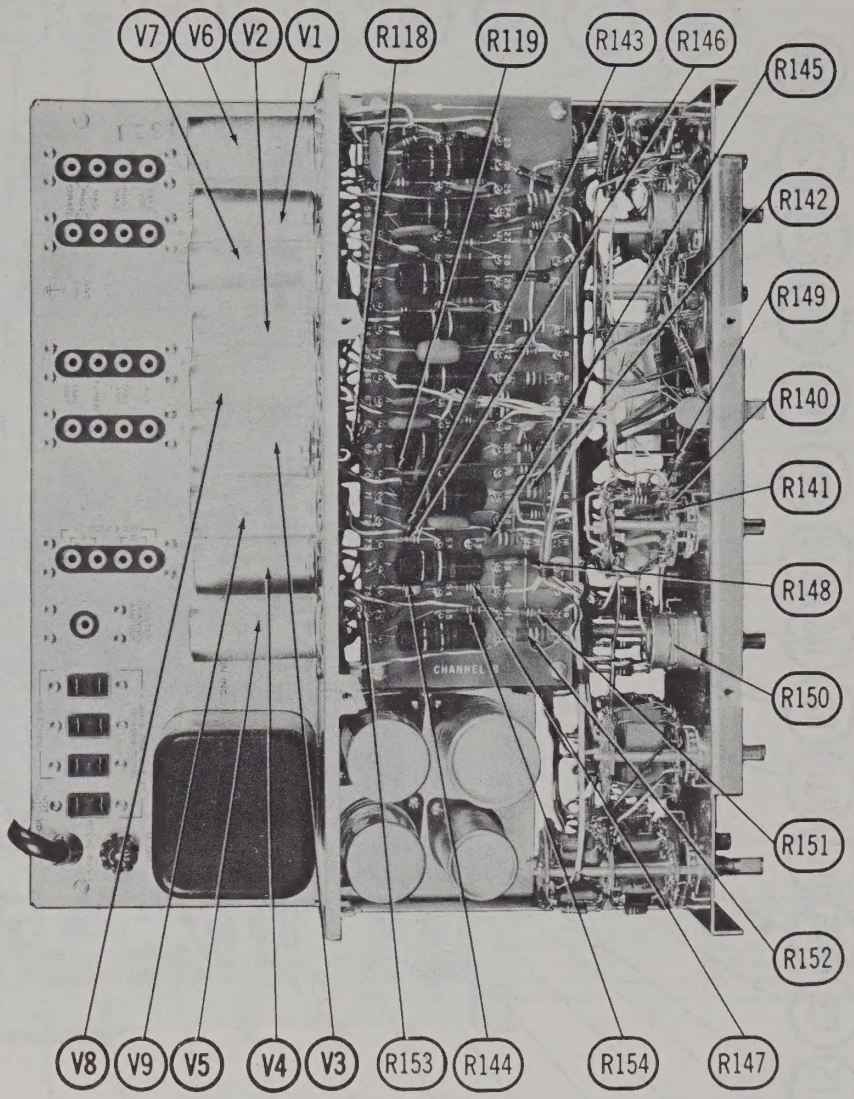

BOTTOM VIEW



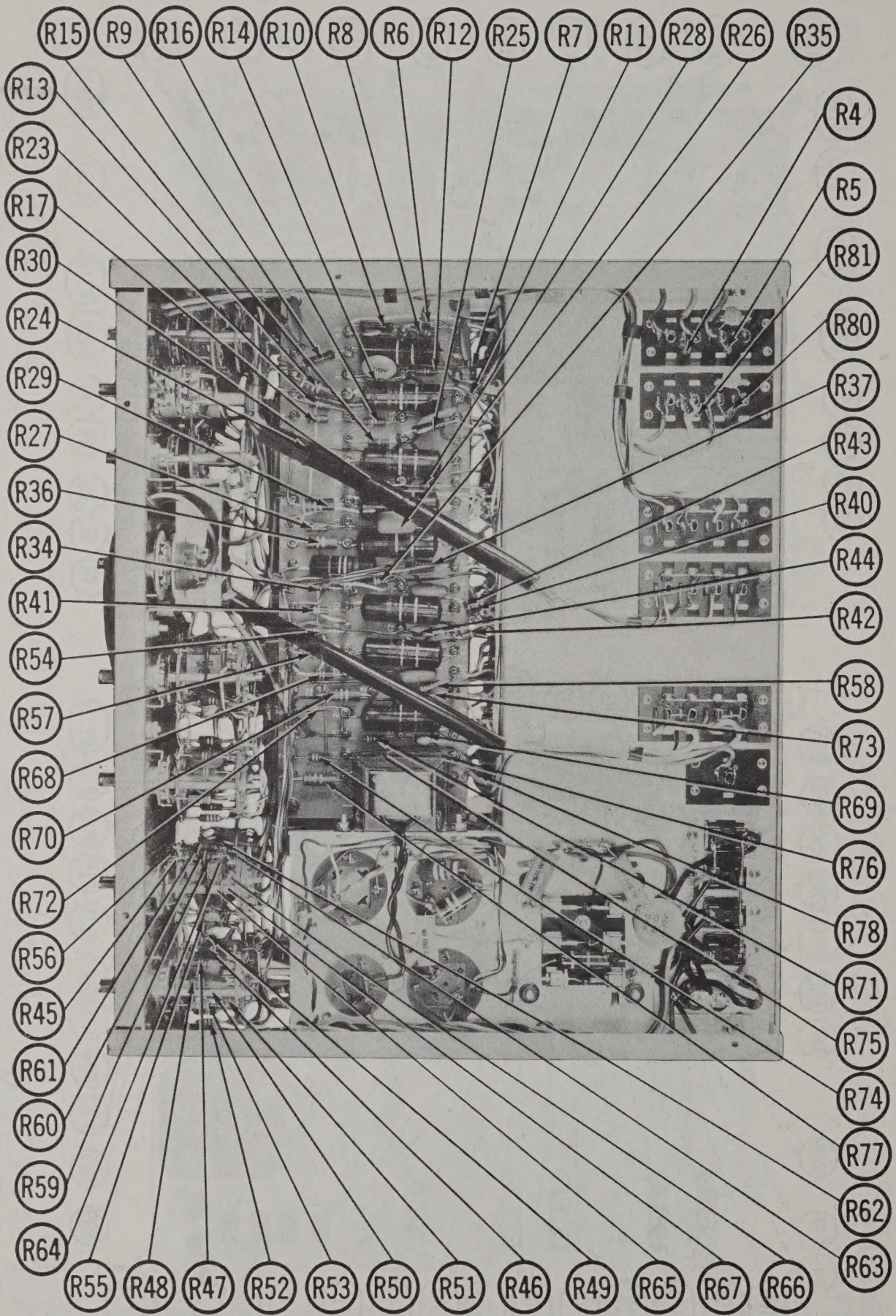

TOP VIEW

CAPACITOR, MISC. & INDUCTOR IDENT.




CHASSIS TOP VIEW – RESISTOR IDENT.




CHASSIS BOTTOM VIEW – RESISTOR IDENT. (R4-81)

# PARTS LIST AND DESCRIPTIONS (Continued)

## RESISTORS (cont)

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | RATING | REPLACEMENT DATA | | |
|---|---|---|---|---|
| | | IRC PART No. | WORKMAN PART No. | REMARKS |
| R53 | 330K | | | |
| R54 | 270K | | | |
| R55 | 270K | | | |
| R56 | 270K | | | |
| R57 | 68K 1W | | | |
| R58 | 430Ω 5% | | | |
| R59 | 10meg | | | |
| R60 | 10meg | | | |
| R61 | 10meg | | | |
| R62 | 10meg | | | |
| R63 | 10meg | | | |
| R64 | 10meg | | | |
| R65 | 10meg | | | |
| R66 | 10meg | | | |
| R67 | 10meg | | | |
| R68 | 680K | | | |
| R69 | 220K | | | |
| R70 | 68K 1W | | | |
| R71 | 390K | | | |
| R72 | 1meg | | | |
| R73 | 430Ω 5% | | | |
| R74 | 240K 5% | | | |
| R75 | 240K 5% | | | |
| R76 | 1meg | | | |
| R77 | 68K 1W | | | |
| R78 | 430Ω 5% | | | |
| R79 | 470K | | | |
| R80 | 56K | | | |
| R81 | 56K | | | |
| R82 | 1meg | | | |
| R83 | 10K | | | |
| R84 | 470K | | | |
| R85 | 215K 5% | | | |
| R86 | 1620Ω 5% | | | |
| R87 | 180K | | | |
| R88 | 560K | | | |
| R89 | 47K 1W | | | |
| R90 | 560Ω 5% 1W | | | |
| R91 | 2.2meg | | | |
| R92 | 160K 5% | | | |
| R93 | 62K 5% | | | |
| R94 | 2400Ω 5% | | | |
| R95 | 1600Ω 5% | | | |
| R96 | 24K 5% | | | |
| R97 | 56K 5% | | | |
| R98 | 100K 5% | | | |
| R99 | 270K 5% | | | |
| R100 | 215K 5% | | | |
| R101 | 1620Ω 5% | | | |
| R102 | 68K | | | |
| R103 | 47K 1W | | | |
| R104 | 560Ω 5% 1W | | | |
| R105 | 180K | | | |
| R106 | 47K | | | |

| ITEM No. | RATING | REPLACEMENT DATA | | |
|---|---|---|---|---|
| | | IRC PART No. | WORKMAN PART No. | REMARKS |
| R107 | 100K | | | |
| R108 | 27K | | | |
| R109 | 220K | | | |
| R110 | 560K | | | |
| R111 | 470K | | | |
| R112 | 68K 1W | | | |
| R113 | 430Ω 5% | | | |
| R114 | 33K | | | |
| R115 | 100K | | | |
| R116 | 100K | | | |
| R117 | 1000Ω | | | |
| R118 | 4.7meg | | | |
| R119 | 1meg | | | |
| R120 | 680K | | | |
| R121 | 330K | | | |
| R122 | 220K | | | |
| R123 | 150K | | | |
| R124 | 100K | | | |
| R125 | 68K | | | |
| R126 | 470K | | | |
| R127 | 150K | | | |
| R128 | 68K | | | |
| R129 | 270K | | | |
| R130 | 270K | | | |
| R131 | 10meg | | | |
| R132 | 10meg | | | |
| R133 | 10meg | | | |
| R134 | 10meg | | | |
| R135 | 10meg | | | |
| R136 | 10meg | | | |
| R137 | 10meg | | | |
| R138 | 10meg | | | |
| R139 | 10meg | | | |
| R140 | 680K | | | |
| R141 | 270K | | | |
| R142 | 68K 1W | | | |
| R143 | 430Ω 5% | | | |
| R144 | 220K | | | |
| R145 | 68K 1W | | | |
| R146 | 430Ω 5% | | | |
| R147 | 390K | | | |
| R148 | 1meg | | | |
| R149 | 470K | | | |
| R150 | 220K | | | |
| R151 | 47K | | | |
| R152 | 68K 1W | | | |
| R153 | 430Ω 5% | | | |
| R154 | 470K | | | |
| R155 | 47K 2W | | | |
| R156 | 10K 2W | | | |
| R157 | 2200Ω 4W | PW4-2200 | 5W-SQ-2200 | |
| R158 | 3.3Ω 5% | | | |
| R159 | 3.3Ω 5% | | | |
| R160 | 560K | | | |

## FILTER CHOKE

| ITEM No. | RATINGS | | | REPLACEMENT DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | CURRENT (Measured) | DC RES. | INDUCTANCE (0 CURRENT 1000~) | Harman-Kardon PART No. | MERIT PART No. | STANCOR PART No. | THORDARSON PART No. | TRIAD PART No. | |
| L1 | .026A | 600Ω | 17HY | FC3283956 | | | | | |

## TRANSFORMER (POWER)

| ITEM No. | RATING | | | REPLACEMENT DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. 1 | SEC. 2 | Harman-Kardon PART No. | MERIT PART No. | STANCOR PART No. | THORDARSON PART No. | TRIAD PART No. | |
| T1 | 117V @ .36A | 145V @ .110A AC | 46VCT @ 1A AC | FT3283735 | | | | | |

## FUSES

| ITEM No. | TYPE | RATING | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Harman-Kardon PART No. | | LITTELFUSE PART No. | | BUSS PART No. | |
| | | | FUSE | HOLDER | FUSE | HOLDER | FUSE | HOLDER |
| M1 | 3AG | 1A 250V | ZCOM3006 | | 312001 (3AG 1A 250V) | 342001 | AGC1 | HKP |

## MISCELLANEOUS

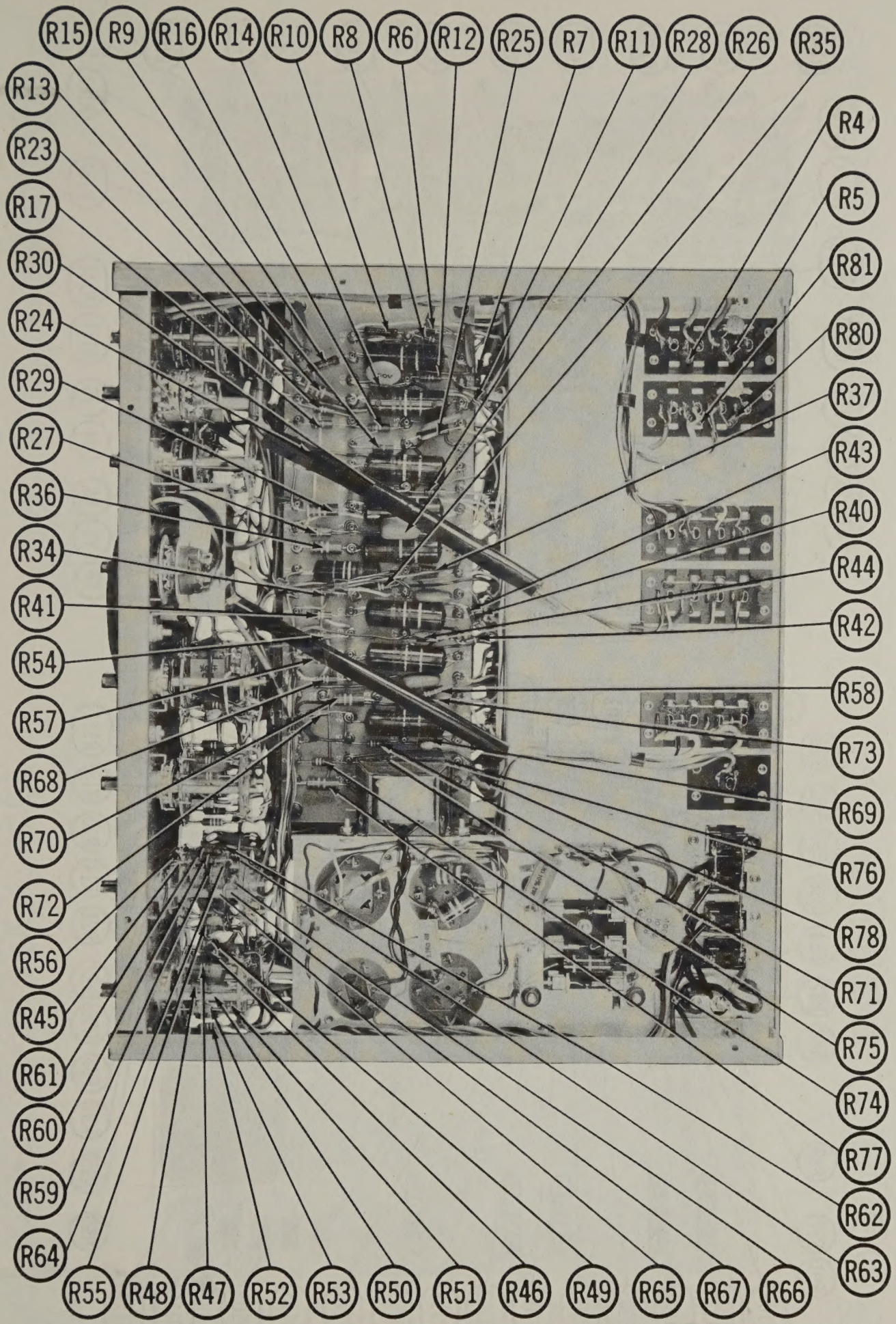
| ITEM No. | PART NAME | Harman-Kardon PART No. | NOTES |
|---|---|---|---|
| M2 | Switch | ER3284122 | Function (Rotary Wafer Type) |
| M3 | Switch | ER3284117 | Turnover (Rotary Wafer Type) |
| M4 | Switch | ER3284119 | Mode (Rotary Wafer Type) |
| M5 | Switch | ER3284118 | Roll Off (Rotary Wafer Type) |
| M6 | Switch | ER3283938 | Low Cut (Rotary Wafer Type) |
| M7 | Switch | ER3283709 | Bass (Rotary Wafer Type, Channel A) |
| M8 | Switch | ER3283710 | Treble (Rotary Wafer Type, Channel A) |
| M9 | Switch | ER3283709 | Bass (Rotary Wafer Type, Channel B) |
| M10 | Switch | ER3283710 | Treble (Rotary Wafer Type, Channel B) |
| M11 | Switch | ESCOM3902 | Contour, (DPDT Slide Type) |
| M12 | Switch | ESCOM3902 | Tape Monitor (DPDT Slide Type) |
| M13 | Switch | ESCOM3902 | Stereo-Reverse (DPDT Slide Type) |
| M14 | Switch | ESCOM3902 | Phase (DPDT Slide Type) |
| M15 | Switch | ER3283764 | Power (Rotary Type) |

## WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in 12 Colors
8524 (Stranded) Available in 12 Colors

Power Cord ..... Use BELDEN No. 17106 (Plastic) or 17126 (Rubber) - 6 Ft.
17109 (Plastic) or 17129 (Rubber) - 9 Ft.

Power Cord (Interlock Type) ..... Use BELDEN No. 8874 (Rubber) or 8895 (Plastic)




CHASSIS BOTTOM VIEW – RESISTOR IDENT.(R4-81)

# PARTS LIST AND DESCRIPTIONS

## TUBES

| ITEM No. | USE | TYPE | ITEM No. | USE | TYPE |
|---|---|---|---|---|---|
| V1 | Channel A Preamp. | ECC83/12AX7 | V6 | Channel B Preamp. | ECC83/12AX7 |
| V2 | Channel A Preamp. | ECC83/12AX7 | V7 | Channel B Preamp. | ECC83/12AX7 |
| V3 | Channel A AF Amp. | ECC81/12AT7 | V8 | Channel B AF Amp. | ECC81/12AT7 |
| V4 | Channel A AF Amp. | ECC81/12AT7 | V9 | Channel B AF Amp. | ECC81/12AT7 |
| V5 | Phasing Amp. - Center Channel Amp. | ECC81/12AT7 | | | |

## POWER RECTIFIERS & SIGNAL DIODES

| ITEM No. | CURRENT RATING (Measured) | ORIGINAL Part or Type No. | RECTIFIERS RCA PART No. | RECTIFIERS SARKES TARZIAN PART No. | DIODES RAYTHEON PART No. | NOTES |
|---|---|---|---|---|---|---|
| X1 | .026A | | | 30H | | |
| X2 | .026A | | | 30H | | |
| X3 | .026A | | | 30H | | |
| X4 | .026A | | | 30H | | |
| X5 | 1A | | | 10H | | |
| X6 | 1A | | | 10H | | |

## ELECTROLYTIC CAPACITORS

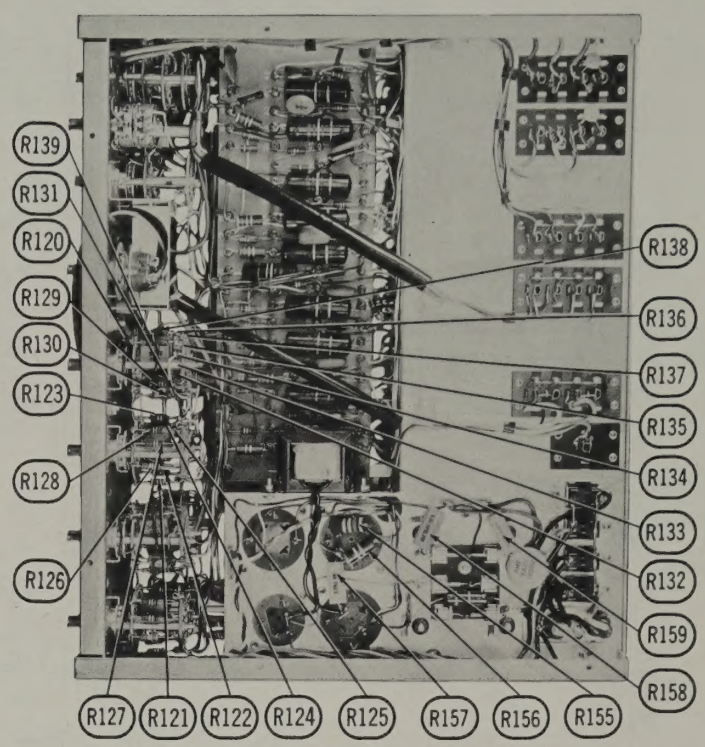
| ITEM No. | RATING CAP. | RATING VOLT. | Harman-Kardon PART No. | AEROVOX PART No. | CORNELL-DUBILIER PART No. | GENERAL ELECTRIC PART No. | MALLORY PART No. | PYRAMID PART No. | SPRAGUE PART No. |
|---|---|---|---|---|---|---|---|---|---|
| C1 | 80 | 250 | JE3283788 | AFH1-31 | A0310 | XC1-11 | FPI28 | TMS-1470 | TVL-1535 |
| C2A | ▲80 | 250 | JE3284144 | AFH2-64 | B0480 | XC2-28 | FP377.1 | TMD-2690 | TVL-2778 |
| B | ▲40 | 450 | | | | | | | |
| C3A | ▲40 | 450 | JE3283786 | AFH3-44 | C0350 | XC3-40 | FP377.1 | TMT-3748 | TVL-3787 |
| B | ▲40 | 450 | | | | | | | |
| C | ■40 | 450 | | | | | | | |
| C4 | 1500 | 35 | JE3283785 | AFH1-14 | | XC1-27 | WP068 | | TVLS-1240 * |

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

## FIXED CAPACITORS

| ITEM No. | RATING | REMARKS | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
|---|---|---|---|---|---|---|---|---|
| C5 | 100 N150 10% | | | | | * | | 10TCP-T10 |
| C6 | .47 | | | UK10-474 | | | | HY-330 |
| C7 | .001 10% | | DI-1000 | DD-102 | PM6D1 | CCD-102 | GP210 | 10TS-D10 |
| C8 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C9 | .05 | | BPD-05 | DD-503 | H-05S5 | 1DP-2-503 | GP150 | 5HK-S10 |
| C10 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C11 | .47mfd 10V | | | UK10-474 | | | | HY-330 |
| C12 | .02 100V | | P288N-02 | DD-203 | CUB2S2 | 1DP-1-203 | GEM-412 | 2TM-S20 |
| C13 | .05 100V | | P288N-05 | DD-503 | CUB2S5 | 1DP-2-503 | GEM-415 | 2TM-S50 |
| C14 | .05 100V | | P288N-05 | DD-503 | CUB2S5 | 1DP-2-503 | GEM-415 | 2TM-S50 |
| C15 | .03 100V | | P288N-03 | DD-303 | CUB6S3 | 1DP-1-303 | GEM-413 | 4TM-S30 |
| C16 | 220 5% | | 1469-00022 | TCZ-220 | 22R5T22 | CM-19B-221J | CNO-322 | MS-322 |
| C17 | 330 5% | | 1469-00033 | | 5R5T33 | CM-19B-331J | MCE241 | MS-333 |
| C18 | 470 5% | | 1469-00047 | | 5R5T47 | CM-19B-471J | MCJ244 | MS-347 |
| C19 | 220 5% | | 1469-00022 | TCZ-220 | 22R5T22 | CM-19B-221J | CNO-322 | MS-322 |
| C20 | 330 5% | | 1469-00033 | | 5R5T33 | CM-19B-331J | MCE241 | MS-333 |
| C21 | .001 10% | | DI-1000 | DD-102 | PM6D1 | CCD-102 | GP210 | 10TS-D10 |

# CHASSIS BOTTOM VIEW-RESISTOR IDENT






# PARTS LIST AND DESCRIPTIONS (Continued)

## FIXED CAPACITORS (cont)

| ITEM No. | RATING | REMARKS | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
|---|---|---|---|---|---|---|---|---|
| C22 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C23 | .05 | | BPD-05 | DD-503 | H-05S5 | 1DP-2-503 | GP150 | 5HK-S50 |
| C24 | .2 100V | | P288N-2 | | CUB2P22 | 1DP-3-204 | GEM-2022 | 2TM-P22 |
| C25 | 6.8 10% | | NPO-DI 6.8 | DTZ-6R8 | C10V68C | CCTO-6R8 | CNO-568 | 10TCC-V68 |
| C26 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C27 | .47mfd 10V | | | UK10-474 | | | | HY-330 |
| C28 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C29 | 20 N750 10% | (15) † | N750-DI 20 | DTN-20 | C10Q2U | CCTN-220 | CN7-420 | 10TCU-Q20 |
| C30 | .05 | | BPD-05 | DD-503 | H-05S5 | 1DP-2-503 | GP150 | 5HK-S50 |
| C31 | .05 100V | | P288N-05 | DD-503 | CUB2S5 | 1DP-2-503 | GEM-415 | 2TM-S50 |
| C32 | .05 | | BPD-05 | DD-503 | H-05S5 | 1DP-2-503 | GP150 | 5HK-S50 |
| C33 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C34 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C35 | .05 100V | | P288N-05 | DD-503 | CUB2S5 | 1DP-2-503 | GEM-415 | 2TM-S50 |
| C36 | .003 10% | | DI-3000 | | 1R5D3 | CCD-302 | JL-233 | 10TS-D30 |
| C37 | .03 100V | | P288N-03 | DD-303 | CUB6S3 | 1DP-1-303 | GEM-413 | 4TM-S30 |
| C38 | .0075 100V | | P288N-0075 | DD-752 | DPMS6D75 | 1DP-1-752 | GP275 | 6PS-D75 |
| C39 | 22 5% | | 1469-000022 | TCZ-22 | 22R5Q22 | CM-19B-220J | CNO-422 | MS-422 |
| C40 | 47 5% | | 1469-000047 | TCZ-47 | 22R5Q47 | CM-19B-470J | CNO-447 | MS-447 |
| C41 | 100 5% | | 1469-0001 | TCZ-100 | 22R5T1 | CM-19B-101J | CNO-310 | MS-310 |
| C42 | 220 5% | | 1469-00022 | TCZ-220 | 22R5T22 | CM-19B-221J | CNO-322 | MS-322 |
| C43 | 7.5 | (4.7) † | | | | | | |
| C44 | .1 200V | | P288N-1 | DF-104 | CUB2P1 | 2DP-3-104 | GEM-201 | 2TM-P10 |
| C45 | 150 5% | | 1469-00015 | TCZ-150 | 22R5T15 | CM-19B-151J | MCE236 | MS-315 |
| C46 | 150 5% | | 1469-00015 | TCZ-150 | 22R5T15 | CM-19B-151J | MCE236 | MS-315 |
| C47 | 150 5% | | 1469-00015 | TCZ-150 | 22R5T15 | CM-19B-151J | MCE236 | MS-315 |
| C48 | 330 5% | | 1469-00033 | | 5R5T33 | CM-19B-331J | MCE241 | MS-333 |
| C49 | 330 5% | | 1469-00033 | | 5R5T33 | CM-19B-331J | MCE241 | MS-333 |
| C50 | .05 100V | | P288N-05 | DD-503 | CUB2S5 | 1DP-2-503 | GEM-415 | 2TM-S50 |
| C51 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C52 | 4.7 N750 10% | | | DTN-5 | C10V5U | CCTN-050 | CN7-547 | 10TCU-V50 |
| C53 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C54 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C55 | 100 N150 10% | | | | | * | | 10TCP-T10 |
| C56 | .47mfd 10V | | | UK10-474 | | | | HY-330 |
| C57 | .001 10% | | DI-1000 | DD-102 | PM6D1 | CCD-102 | GP210 | 10TS-D10 |
| C58 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C59 | .05 | | BPD-05 | DD-503 | H-05S5 | 1DP-2-503 | GP150 | 5HK-S50 |
| C60 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C61 | .47mfd 10V | | | UK10-474 | | | | HY-330 |
| C62 | .03 100V | | P288N-03 | DD-303 | CUB6S3 | 1DP-1-303 | GEM-413 | 4TM-S30 |
| C63 | .05 100V | | P288N-05 | DD-503 | CUB2S5 | 1DP-2-503 | GEM-415 | 2TM-S50 |
| C64 | .02 100V | | P288N-02 | DD-203 | CUB2S2 | 1DP-1-203 | GEM-412 | 2TM-S20 |
| C65 | .05 100V | | P288N-05 | DD-503 | CUB2S5 | 1DP-2-503 | GEM-415 | 2TM-S50 |
| C66 | 330 5% | | 1469-00033 | | 5R5T33 | CM-19B-331J | MCE241 | MS-333 |
| C67 | 220 5% | | 1469-00022 | TCZ-220 | 22R5T22 | CM-19B-221J | CNO-322 | MS-322 |
| C68 | 470 5% | | 1469-00047 | | 5R5T47 | CM-19B-471J | MCJ244 | MS-347 |
| C69 | 330 5% | | 1469-00033 | | 5R5T33 | CM-19B-331J | MCE241 | MS-333 |
| C70 | 220 5% | | 1469-00022 | TCZ-220 | 22R5T22 | CM-19B-221J | CNO-322 | MS-322 |
| C71 | .001 10% | | DI-1000 | DD-102 | PM6D1 | CCD-102 | GP210 | 10TS-D10 |
| C72 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C73 | .05 | | BPD-05 | DD-503 | H-05S5 | 1DP-2-503 | GP150 | 5HK-S50 |
| C74 | .2 100V | | P488N-2 | | CUB2P22 | 1DP-3-204 | GEM-2022 | 2TM-P22 |
| C75 | 6.8 10% | | NPO-DI 6.8 | DTZ-6R8 | C10V68C | CCTO-6R8 | CNO-568 | 10TCC-V68 |
| C76 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C77 | .47mfd 10V | | | UK10-474 | | | | HY-330 |
| C78 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C79 | 15 N750 10% | | N750-DI 15 | DTN-15 | C10Q15U | CCTN-150 | CN7-415 | 10TCU-Q15 |
| C80 | .05 | | BPD-05 | DD-503 | H-05S5 | 1DP-2-503 | GP150 | 5HK-S50 |
| C81 | .05 100V | | P288N-05 | DD-503 | CUB2S5 | 1DP-2-503 | GEM-415 | 2TM-S50 |
| C82 | .05 | | BPD-05 | DD-503 | H-05S5 | 1DP-2-503 | GP150 | 5HK-S50 |
| C83 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C84 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C85 | .05 100V | | P288N-05 | DD-503 | CUB2S5 | 1DP-2-503 | GEM-415 | 2TM-S50 |
| C86 | .03 100V | | P288N-03 | DD-303 | CUB6S3 | 1DP-1-303 | GEM-413 | 4TM-S30 |
| C87 | .003 10% | | DI-3000 | | 1R5D3 | CCD-302 | JL-233 | 10TS-D30 |
| C88 | .0075 100V | | P288N-0075 | DD-752 | DPMS6D75 | 1DP-1-752 | GP275 | 6PS-D75 |
| C89 | 22 5% | | 1469-000022 | TCZ-22 | 22R5Q22 | CM-19B-220J | CNO-422 | MS-422 |
| C90 | 47 5% | | 1469-000047 | TCZ-47 | 22R5Q47 | CM-19B-470J | CNO-447 | MS-447 |

## FIXED CAPACITORS (cont)

| ITEM No. | RATING | REMARKS | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
|---|---|---|---|---|---|---|---|---|
| C91 | 100 5% | | 1469-0001 | TCZ-100 | 22R5T1 | CM-19B-101J | CNO-310 | MS-310 |
| C92 | 220 5% | | 1469-00022 | TCZ-220 | 22R5T22 | CM-19B-221J | CNO-322 | MS-322 |
| C93 | 4.7 N750 10% | | | DTN-5 | C10V5U | CCTN-050 | CN7-547 | 10TCU-V50 |
| C94 | .1 200V | | P288N-1 | DF-104 | CUB2P1 | 2DP-3-104 | GEM-201 | 2TM-P10 |
| C95 | 150 5% | | 1469-00015 | TCZ-150 | 22R5T15 | CM-19B-151J | MCE236 | MS-315 |
| C96 | 150 5% | | 1469-00015 | TCZ-150 | 22R5T15 | CM-19B-151J | MCE236 | MS-315 |
| C97 | 150 5% | | 1469-00015 | TCZ-150 | 22R5T15 | CM-19B-151J | MCE236 | MS-315 |
| C98 | 330 5% | | 1469-00033 | | 5R5T33 | CM-19B-331J | MCE241 | MS-333 |
| C99 | 330 5% | | 1469-00033 | | 5R5T33 | CM-19B-331J | MCE241 | MS-333 |
| C100 | .05 100V | | P288N-05 | DD-503 | CUB2S5 | 1DP-2-503 | GEM-415 | 2TM-S50 |
| C101 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C102 | 4.7 N750 10% | | | DTN-5 | C10V5U | CCTN-050 | CN7-547 | 10TCU-V50 |
| C103 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C104 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C105 | .01 400V | | P488N-01 | D6-103 | CUB4S1 | 4DP-1-103 | GEM-411 | 4TM-S10 |
| C106A | .01 1400V | | DAC-27 | DDI6-103 | HVE16S1 | 16DP-3-103 | UAC-2X110 | BL-S10 |
| B | .01 1400V | | DAC-27 | DDI6-103 | HVE16S1 | 16DP-3-103 | | BL-S10 |

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
† Alternate.

## CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | USE | RESISTANCE | Harman-Kardon PART No. | CENTRALAB PART No. | CLAROSTAT PART No. | CTS-IRC PART No. | MALLORY PART No. |
|---|---|---|---|---|---|---|---|
| R1A | Loudness, Channel A | 500K* | RV3285193 | BT-160, STR-160, | | | |
| B | Loudness, Channel B | 500K* | | or (ABT-160, STR-160, AK-11) | | | |
| R2A | Blend, Cent. Channel | 500K | RV3283746 | B-60, SR-70, or | | | FA55A, RU16A, |
| B | Blend, Channels A & B | 1meg | | (AB-60, SR-70, AK-11) | | | CS3500 |
| R3A | Balance, Chanel A | 200K | RV3284133 | B-51, SR-513, or | | | |
| B | Balance, Channel B | 200K | | (AB-51, SR-513, AK-11) | | | |

* Taps ⓐ 50K & 250K.

## RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | RATING | IRC PART No. | WORKMAN PART No. | REMARKS |
|---|---|---|---|---|
| R4 | 56K | | | |
| R5 | 56K | | | |
| R6 | 1meg | | | |
| R7 | 10K | | | |
| R8 | 470K | | | |
| R9 | 215K 5% | | | |
| R10 | 1620Ω 5% | | | |
| R11 | 180K | | | |
| R12 | 560K | | | |
| R13 | 47K 1W | | | |
| R14 | 560Ω 1W 5% | | | |
| R15 | 2.2meg | | | |
| R16 | 160K 5% | | | |
| R17 | 2400Ω 5% | | | |
| R18 | 1600Ω 5% | | | |
| R19 | 24K 5% | | | |
| R20 | 56K 5% | | | |
| R21 | 100K 5% | | | |
| R22 | 270K 5% | | | |
| R23 | 62K 5% | | | |
| R24 | 215K 5% | | | |
| R25 | 1620Ω 5% | | | |
| R26 | 68K | | | |
| R27 | 180K | | | |
| R28 | 560K | | | |
| R29 | 47K 1W | | | |
| R30 | 560Ω 5% | | | |
| R31 | 47K | | | |
| R32 | 100K | | | |
| R33 | 27K | | | |
| R34 | 220K | | | |
| R35 | 560K | | | |
| R36 | 68K 1W | | | |
| R37 | 430Ω | | | |
| R38 | 470K | | | |
| R39 | 33K | | | |
| R40 | 100K | | | |
| R41 | 100K | | | |
| R42 | 1000Ω | | | |
| R43 | 4.7meg | | | |
| R44 | 1meg | | | |
| R45 | 680K | | | |
| R46 | 68K | | | |
| R47 | 150K | | | |
| R48 | 470K | | | |
| R49 | 68K | | | |
| R50 | 100K | | | |
| R51 | 150K | | | |
| R52 | 220K | | | |



# PARTS LIST AND DESCRIPTIONS (Continued)

## RESISTORS (cont)

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | RATING | IRC PART No. | WORKMAN PART No. | REMARKS |
|---|---|---|---|---|
| R53 | 330K | | | |
| R54 | 270K | | | |
| R55 | 270K | | | |
| R56 | 270K | | | |
| R57 | 68K 1W | | | |
| R58 | 430Ω 5% | | | |
| R59 | 10meg | | | |
| R60 | 10meg | | | |
| R61 | 10meg | | | |
| R62 | 10meg | | | |
| R63 | 10meg | | | |
| R64 | 10meg | | | |
| R65 | 10meg | | | |
| R66 | 10meg | | | |
| R67 | 10meg | | | |
| R68 | 680K | | | |
| R69 | 220K | | | |
| R70 | 68K 1W | | | |
| R71 | 390K | | | |
| R72 | 1meg | | | |
| R73 | 430Ω 5% | | | |
| R74 | 240K 5% | | | |
| R75 | 240K 5% | | | |
| R76 | 1meg | | | |
| R77 | 68K 1W | | | |
| R78 | 430Ω 5% | | | |
| R79 | 470K | | | |
| R80 | 56K | | | |
| R81 | 56K | | | |
| R82 | 1meg | | | |
| R83 | 10K | | | |
| R84 | 470K | | | |
| R85 | 215K 5% | | | |
| R86 | 1620Ω 5% | | | |
| R87 | 180K | | | |
| R88 | 560K | | | |
| R89 | 47K 1W | | | |
| R90 | 560Ω 5% 1W | | | |
| R91 | 2.2meg | | | |
| R92 | 160K 5% | | | |
| R93 | 62K 5% | | | |
| R94 | 2400Ω 5% | | | |
| R95 | 1600Ω 5% | | | |
| R96 | 24K 5% | | | |
| R97 | 56K 5% | | | |
| R98 | 100K 5% | | | |
| R99 | 270K 5% | | | |
| R100 | 215K 5% | | | |
| R101 | 1620Ω 5% | | | |
| R102 | 68K | | | |
| R103 | 47K 1W | | | |
| R104 | 560Ω 5% 1W | | | |
| R105 | 180K | | | |
| R106 | 47K | | | |

| ITEM No. | RATING | IRC PART No. | WORKMAN PART No. | REMARKS |
|---|---|---|---|---|
| R107 | 100K | | | |
| R108 | 27K | | | |
| R109 | 220K | | | |
| R110 | 560K | | | |
| R111 | 470K | | | |
| R112 | 68K 1W | | | |
| R113 | 430Ω 5% | | | |
| R114 | 33K | | | |
| R115 | 100K | | | |
| R116 | 100K | | | |
| R117 | 1000Ω | | | |
| R118 | 4.7meg | | | |
| R119 | 1meg | | | |
| R120 | 680K | | | |
| R121 | 330K | | | |
| R122 | 220K | | | |
| R123 | 150K | | | |
| R124 | 100K | | | |
| R125 | 68K | | | |
| R126 | 470K | | | |
| R127 | 150K | | | |
| R128 | 68K | | | |
| R129 | 270K | | | |
| R130 | 270K | | | |
| R131 | 10meg | | | |
| R132 | 10meg | | | |
| R133 | 10meg | | | |
| R134 | 10meg | | | |
| R135 | 10meg | | | |
| R136 | 10meg | | | |
| R137 | 10meg | | | |
| R138 | 10meg | | | |
| R139 | 10meg | | | |
| R140 | 680K | | | |
| R141 | 270K | | | |
| R142 | 68K 1W | | | |
| R143 | 430Ω 5% | | | |
| R144 | 220K | | | |
| R145 | 68K 1W | | | |
| R146 | 430Ω 5% | | | |
| R147 | 390K | | | |
| R148 | 1meg | | | |
| R149 | 470K | | | |
| R150 | 220K | | | |
| R151 | 47K | | | |
| R152 | 68K 1W | | | |
| R153 | 430Ω 5% | | | |
| R154 | 470K | | | |
| R155 | 47K 2W | | | |
| R156 | 10K 2W | | | |
| R157 | 2200Ω 4W | PW4-2200 | 5W-8Q-2200 | |
| R158 | 3.3Ω 5% | | | |
| R159 | 3.3Ω 5% | | | |
| R160 | 560K | | | |

## FILTER CHOKE

| ITEM No. | RATINGS CURRENT (Measured) | RATINGS DC RES. | RATINGS INDUCTANCE (0 CURRENT 1000~) | Harman-Kardon PART No. | MERIT PART No. | STANCOR PART No. | THORDARSON PART No. | TRIAD PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| L1 | .026A | 600Ω | 17HY | FC3283956 | | | | | |

## TRANSFORMER (POWER)

| ITEM No. | RATING PRI. | RATING SEC. 1 | RATING SEC. 2 | Harman-Kardon PART No. | MERIT PART No. | STANCOR PART No. | THORDARSON PART No. | TRIAD PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| T1 | 117V ⓐ .36A | 145V ⓐ .110A AC | 46VCT ⓐ 1A AC | FT3283735 | | | | | |

## FUSES

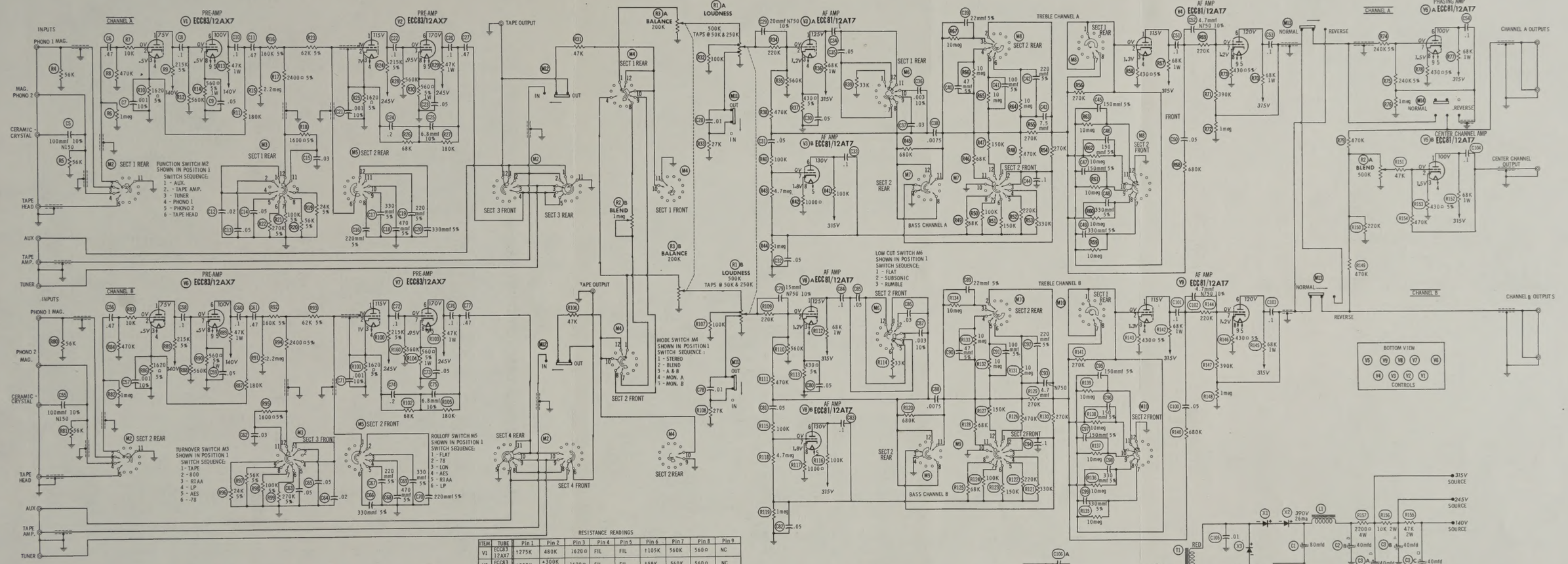
| ITEM No. | TYPE | RATING | Harman-Kardon PART No. FUSE | Harman-Kardon PART No. HOLDER | LITTELFUSE PART No. FUSE | LITTELFUSE PART No. HOLDER | BUSS PART No. FUSE | BUSS PART No. HOLDER |
|---|---|---|---|---|---|---|---|---|
| M1 | 3AG | 1A 250V | ZCOM3006 | | 312001 (3AG 1A 250V) | 342001 | AGC1 | HKP |

## MISCELLANEOUS

| ITEM No. | PART NAME | Harman-Kardon PART No. | NOTES |
|---|---|---|---|
| M2 | Switch | ER3284122 | Function (Rotary Wafer Type) |
| M3 | Switch | ER3284117 | Turnover (Rotary Wafer Type) |
| M4 | Switch | ER3284119 | Mode (Rotary Wafer Type) |
| M5 | Switch | ER3284118 | Roll Off (Rotary Wafer Type) |
| M6 | Switch | ER3283938 | Low Cut (Rotary Wafer Type) |
| M7 | Switch | ER3283709 | Bass (Rotary Wafer Type, Channel A) |
| M8 | Switch | ER3283710 | Treble (Rotary Wafer Type, Channel A) |
| M9 | Switch | ER3283709 | Bass (Rotary Wafer Type, Channel B) |
| M10 | Switch | ER3283710 | Treble (Rotary Wafer Type, Channel B) |
| M11 | Switch | ESCOM3902 | Contour, (DPDT Slide Type) |
| M12 | Switch | ESCOM3902 | Tape Monitor (DPDT Slide Type) |
| M13 | Switch | ESCOM3902 | Stereo-Reverse (DPDT Slide Type) |
| M14 | Switch | ESCOM3902 | Phase (DPDT Slide Type) |
| M15 | Switch | ER3283764 | Power (Rotary Type) |

## WIRING DATA

| | |
|---|---|
| General-use Unshielded Hook-up Wire | Use BELDEN No. 8530 (Solid) Available in 12 Colors; 8524 (Stranded) Available in 12 Colors |
| Power Cord | Use BELDEN No. 17106 (Plastic) or 17126 (Rubber) - 6 Ft.; 17109 (Plastic) or 17129 (Rubber) - 9 Ft. |
| Power Cord (Interlock Type) | Use BELDEN No. 8674 (Rubber) or 8895 (Plastic) |




NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

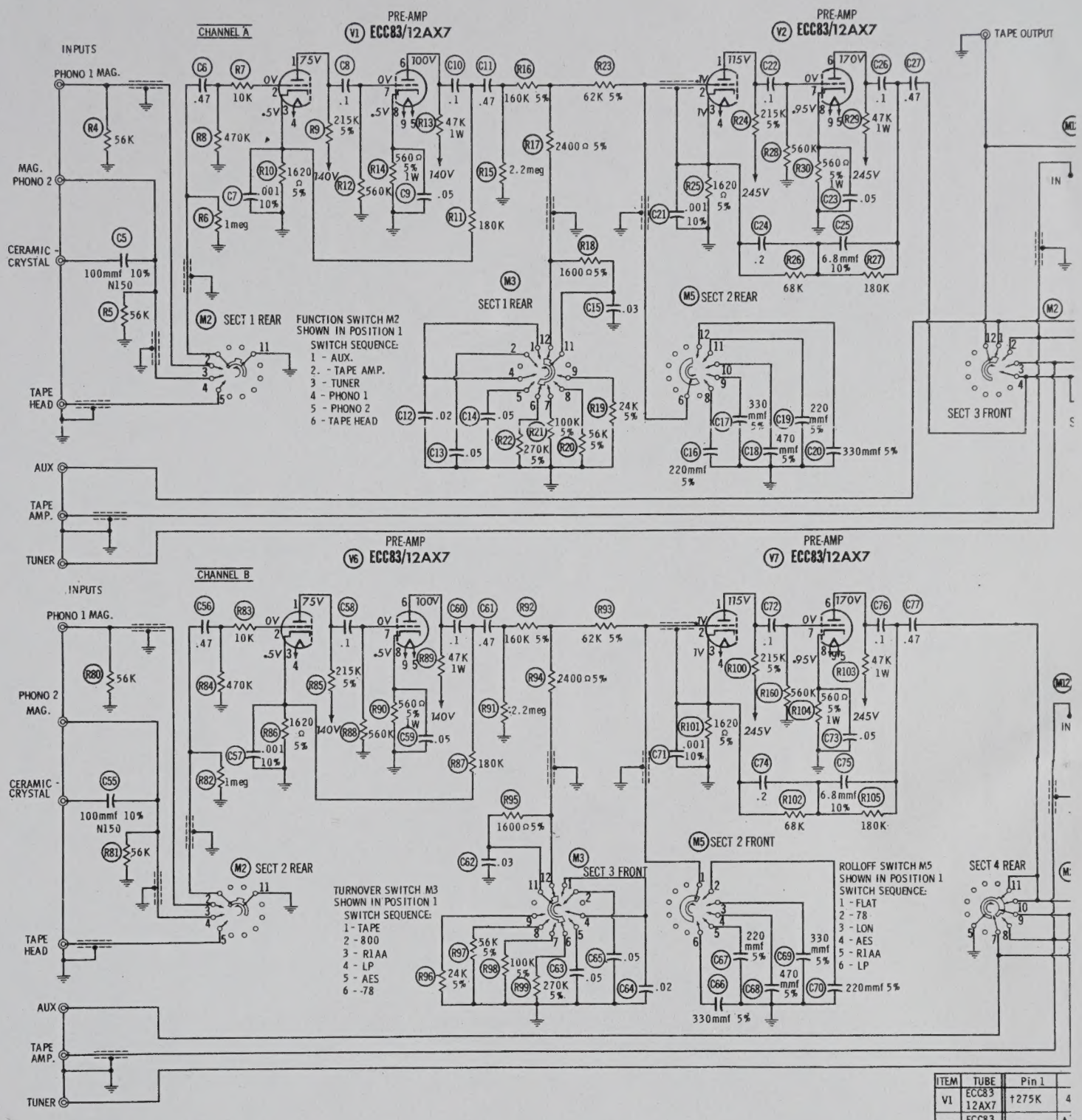
RESISTANCE READINGS

| ITEM | TUBE | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 | Pin 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| V1 | ECC83 12AX7 | †275K | 480K | 1620Ω | FIL | FIL | †105K | 560K | 560Ω | NC |
| V2 | ECC83 12AX7 | †227K | ▲300K ●2.4meg | 1620Ω | FIL | FIL | †59K | 560K | 560Ω | NC |
| V3 | ECC81 12AT7 | †70K | 170K | 430Ω | FIL | FIL | †100K | 5.7meg | 1000Ω | NC |
| V4 | ECC81 12AT7 | †70K | 170K | 430Ω | FIL | FIL | †70K | 800K | 430Ω | NC |
| V5 | ECC81 12AT7 | †70K | 47K | 430Ω | FIL | FIL | †70K | 500K | 430Ω | NC |
| V6 | ECC83 12AX7 | †275K | 480K | 1620Ω | FIL | FIL | †105K | 560K | 560Ω | NC |
| V7 | ECC83 12AX7 | †227K | ● 130K | 1620Ω | FIL | FIL | †59K | 560K | 560Ω | NC |
| V8 | ECC81 12AT7 | †70K | 170K | 430Ω | FIL | FIL | †100K | 5.7meg | 1000Ω | NC |
| V9 | ECC81 12AT7 | †70K | 170K | 430Ω | FIL | FIL | †70K | 800K | 430Ω | NC |

VOLTAGES MEASURED IN "AUXILIARY" POSITION, TURNOVER SW IN R1AA, MODE IN "STEREO".
NC NO CONNECTION
† MEASURED FROM OUTPUT OF X2.
▲ MEASURED IN "TAPE" POSITION ( TURNOVER SW ). ● MEASURED IN "AES, 78" POSITION (TURNOVER SW)

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**HARMAN-KARDON MODEL CITATION I**




| ITEM | TUBE | Pin 1 | |
|---|---|---|---|
| V1 | ECC83 12AX7 | †275K | 4 |
| V2 | ECC83 12AX7 | †227K | ▲ ■ |
| V3 | ECC81 12AT7 | †70K | 1 |
| V4 | ECC81 12AT7 | †70K | 1 |
| V5 | ECC81 12AT7 | †70K | 4 |
| V6 | ECC83 12AX7 | †275K | 4 |
| V7 | ECC83 12AX7 | †227K | ■ |
| V8 | ECC81 12AT7 | †70K | 1 |
| V9 | ECC81 12AT7 | †70K | 1 |

VOLTAGES MEASURED IN "A
† MEASURED FROM OUT
▲ MEASURED IN "TAPE"

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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# PARTS LIST AND DESCRIPTIONS (Continued)

## FIXED CAPACITORS (cont)

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
| C22 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C23 | .05 | | BPD-05 | DD-503 | H-05S5 | 1DP-2-503 | GP150 | 5HK-S50 |
| C24 | .2 100V | | P288N-2 | | CUB2P22 | 1DP-3-204 | GEM-2022 | 2TM-P22 |
| C25 | 6.8 10% | | NPO-DI 6.8 | DTZ-6R8 | C10V68C | CCTO-6R8 | CNO-568 | 10TCC-V68 |
| C26 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C27 | .47mfd 10V | | | UK10-474 | | | | HY-330 |
| C28 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C29 | 20 N750 10% | (15) † | N750-DI 20 | DTN-20 | C10Q2U | CCTN-220 | CN7-420 | 10TCU-Q20 |
| C30 | .05 | | BPD-05 | DD-503 | H-05S5 | 1DP-2-503 | GP150 | 5HK-S50 |
| C31 | .05 100V | | P288N-05 | DD-503 | CUB2S5 | 1DP-2-503 | GEM-415 | 2TM-S50 |
| C32 | .05 | | BPD-05 | DD-503 | H-05S5 | 1DP-2-503 | GP150 | 5HK-S50 |
| C33 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C34 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C35 | .05 100V | | P288N-05 | DD-503 | CUB2S5 | 1DP-2-503 | GEM-415 | 2TM-S50 |
| C36 | .003 10% | | DI-3000 | | 1R5D3 | CCD-302 | JL-233 | 10TS-D30 |
| C37 | .03 100V | | P288N-03 | DD-303 | CUB6S3 | 1DP-1-303 | GEM-413 | 4TM-S30 |
| C38 | .0075 100V | | P288N-0075 | DD-752 | DPMS6D75 | 1DP-1-752 | GP275 | 6PS-D75 |
| C39 | 22 5% | | 1469-000022 | TCZ-22 | 22R5Q22 | CM-19B-220J | CNO-422 | MS-422 |
| C40 | 47 5% | | 1469-000047 | TCZ-47 | 22R5Q47 | CM-19B-470J | CNO-447 | MS-447 |
| C41 | 100 5% | | 1469-0001 | TCZ-100 | 22R5T1 | CM-19B-101J | CNO-310 | MS-310 |
| C42 | 220 5% | | 1469-00022 | TCZ-220 | 22R5T22 | CM-19B-221J | CNO-322 | MS-322 |
| C43 | 7.5 | (4.7) † | | | | | | |
| C44 | .1 200V | | P288N-1 | DF-104 | CUB2P1 | 2DP-3-104 | GEM-201 | 2TM-P10 |
| C45 | 150 5% | | 1469-00015 | TCZ-150 | 22R5T15 | CM-19B-151J | MCE236 | MS-315 |
| C46 | 150 5% | | 1469-00015 | TCZ-150 | 22R5T15 | CM-19B-151J | MCE236 | MS-315 |
| C47 | 150 5% | | 1469-00015 | TCZ-150 | 22R5T15 | CM-19B-151J | MCE236 | MS-315 |
| C48 | 330 5% | | 1469-00033 | | 5R5T33 | CM-19B-331J | MCE241 | MS-333 |
| C49 | 330 5% | | 1469-00033 | | 5R5T33 | CM-19B-331J | MCE241 | MS-333 |
| C50 | .05 100V | | P288N-05 | DD-503 | CUB2S5 | 1DP-2-503 | GEM-415 | 2TM-S50 |
| C51 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C52 | 4.7 N750 10% | | | DTN-5 | C10V5U | CCTN-050 | CN7-547 | 10TCU-V50 |
| C53 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C54 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C55 | 100 N150 10% | | | | | * | | 10TCP-T10 |
| C56 | .47mfd 10V | | | UK10-474 | | | | HY-330 |
| C57 | .001 10% | | DI-1000 | DD-102 | PM6D1 | CCD-102 | GP210 | 10TS-D10 |
| C58 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C59 | .05 | | BPD-05 | DD-503 | H-05S5 | 1DP-2-503 | GP150 | 5HK-S50 |
| C60 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C61 | .47mfd 10V | | | UK10-474 | | | | HY-330 |
| C62 | .03 100V | | P288N-03 | DD-303 | CUB6S3 | 1DP-1-303 | GEM-413 | 4TM-S30 |
| C63 | .05 100V | | P288N-05 | DD-503 | CUB2S5 | 1DP-2-503 | GEM-415 | 2TM-S50 |
| C64 | .02 100V | | P288N-02 | DD-203 | CUB2S2 | 1DP-1-203 | GEM-412 | 2TM-S20 |
| C65 | .05 100V | | P288N-05 | DD-503 | CUB2S5 | 1DP-2-503 | GEM-415 | 2TM-S50 |
| C66 | 330 5% | | 1469-00033 | | 5R5T33 | CM-19B-331J | MCE241 | MS-333 |
| C67 | 220 5% | | 1469-00022 | TCZ-220 | 22R5T22 | CM-19B-221J | CNO-322 | MS-322 |
| C68 | 470 5% | | 1469-00047 | | 5R5T47 | CM-19B-471J | MCJ244 | MS-347 |
| C69 | 330 5% | | 1469-00033 | | 5R5T33 | CM-19B-331J | MCE241 | MS-333 |
| C70 | 220 5% | | 1469-00022 | TCZ-220 | 22R5T22 | CM-19B-221J | CNO-322 | MS-322 |
| C71 | .001 10% | | DI-1000 | DD-102 | PM6D1 | CCD-102 | GP210 | 10TS-D10 |
| C72 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C73 | .05 | | BPD-05 | DD-503 | H-05S5 | 1DP-2-503 | GP150 | 5HK-S50 |
| C74 | .2 100V | | P488N-2 | | CUB2P22 | 1DP-3-204 | GEM-2022 | 2TM-P22 |
| C75 | 6.8 10% | | NPO-DI 6.8 | DTZ-6R8 | C10V68C | CCTO-6R8 | CNO-568 | 10TCC-V68 |
| C76 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C77 | .47mfd 10V | | | UK10-474 | | | | HY-330 |
| C78 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C79 | 15 N750 10% | | N750-DI 15 | DTN-15 | C10Q15U | CCTN-150 | CN7-415 | 10TCU-Q15 |
| C80 | .05 | | BPD-05 | DD-503 | H-05S5 | 1DP-2-503 | GP150 | 5HK-S50 |
| C81 | .05 100V | | P288N-05 | DD-503 | CUB2S5 | 1DP-2-503 | GEM-415 | 2TM-S50 |
| C82 | .05 | | BPD-05 | DD-503 | H-05S5 | 1DP-2-503 | GP150 | 5HK-S50 |
| C83 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C84 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C85 | .05 100V | | P288N-05 | DD-503 | CUB2S5 | 1DP-2-503 | GEM-415 | 2TM-S50 |
| C86 | .03 100V | | P288N-03 | DD-303 | CUB6S3 | 1DP-1-303 | GEM-413 | 4TM-S30 |
| C87 | .003 10% | | DI-3000 | | 1R5D3 | CCD-302 | JL-233 | 10TS-D30 |
| C88 | .0075 100V | | P288N-0075 | DD-752 | DPMS6D75 | 1DP-1-752 | GP275 | 6PS-D75 |
| C89 | 22 5% | | 1469-000022 | TCZ-22 | 22R5Q22 | CM-19B-220J | CNO-422 | MS-422 |
| C90 | 47 5% | | 1469-000047 | TCZ-47 | 22R5Q47 | CM-19B-470J | CNO-447 | MS-447 |

## FIXED CAPACITORS (cont)

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
| C91 | 100 5% | | 1469-0001 | TCZ-100 | 22R5T1 | CM-19B-101J | CNO-310 | MS-310 |
| C92 | 220 5% | | 1469-00022 | TCZ-220 | 22R5T22 | CM-19B-221J | CNO-322 | MS-322 |
| C93 | 4.7 N750 10% | | | DTN-5 | C10V5U | CCTN-050 | CN7-547 | 10TCU-V50 |
| C94 | .1 200V | | P288N-1 | DF-104 | CUB2P1 | 2DP-3-104 | GEM-201 | 2TM-P10 |
| C95 | 150 5% | | 1469-00015 | TCZ-150 | 22R5T15 | CM-19B-151J | MCE236 | MS-315 |
| C96 | 150 5% | | 1469-00015 | TCZ-150 | 22R5T15 | CM-19B-151J | MCE236 | MS-315 |
| C97 | 150 5% | | 1469-00015 | TCZ-150 | 22R5T15 | CM-19B-151J | MCE236 | MS-315 |
| C98 | 330 5% | | 1469-00033 | | 5R5T33 | CM-19B-331J | MCE241 | MS-333 |
| C99 | 330 5% | | 1469-00033 | | 5R5T33 | CM-19B-331J | MCE241 | MS-333 |
| C100 | .05 100V | | P288N-05 | DD-503 | CUB2S5 | 1DP-2-503 | GEM-415 | 2TM-S50 |
| C101 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C102 | 4.7 N750 10% | | | DTN-5 | C10V5U | CCTN-050 | CN7-547 | 10TCU-V50 |
| C103 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C104 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C105 | .01 400V | | P488N-01 | D6-103 | CUB4S1 | 4DP-1-103 | GEM-411 | 4TM-S10 |
| C106A | .01 1400V | | DAC-27 | DD16-103 | HVE16S1 | 16DP-3-103 | UAC-2X110 | BL-S10 |
| B | .01 1400V | | DAC-27 | DD16-103 | HVE16S1 | 16DP-3-103 | | BL-S10 |

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
† Alternate.

## CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

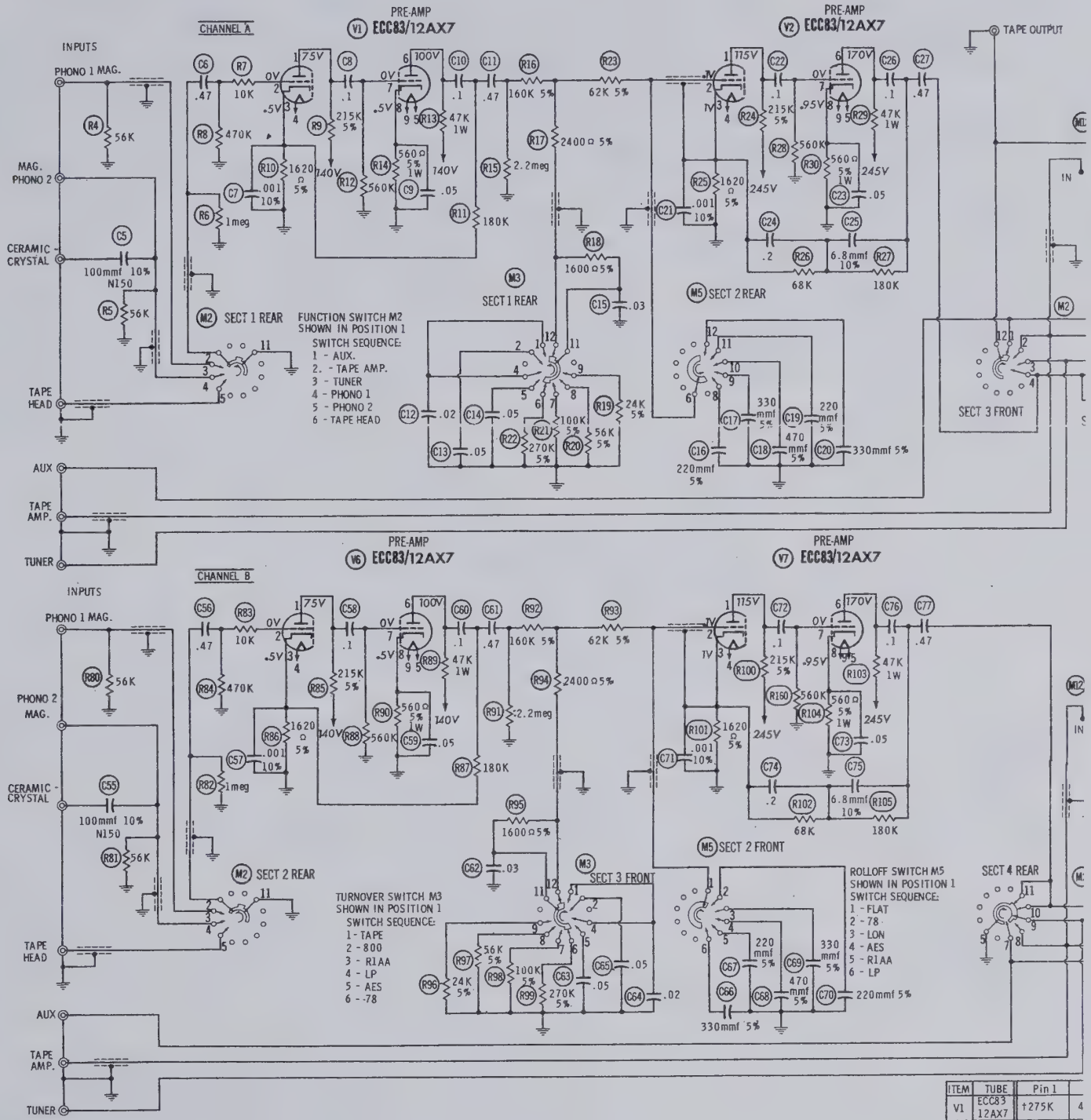
| ITEM No. | USE | RESIST-ANCE | REPLACEMENT DATA | | | | |
|---|---|---|---|---|---|---|---|
| | | | Harman-Kardon PART No. | CENTRALAB PART No. | CLAROSTAT PART No. | CTS–IRC PART No. | MALLORY PART No. |
| R1A | Loudness, Channel A | 500K* | RV3285193 | BT-160, STR-160, | | | |
| B | Loudness, Channel B | 500K* | | or (ABT-160, STR-160, AK-11) | | | |
| R2A | Blend, Cent. Channel | 500K | RV3283746 | B-60, SR-70, or | | | FA55A, RU16A, |
| B | Blend, Channels A & B | 1meg | | (AB-60, SR-70, AK-11) | | | CS3500 |
| R3A | Balance, Chanel A | 200K | RV3284133 | B-51, SR-513, or | | | |
| B | Balance, Channel B | 200K | | (AB-51, SR-513, AK-11) | | | |

* Taps @ 50K & 250K.

## RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | RATING | REPLACEMENT DATA | | | ITEM No. | RATING | REPLACEMENT DATA | | |
|---|---|---|---|---|---|---|---|---|---|
| | | IRC PART No. | WORKMAN PART No. | REMARKS | | | IRC PART No. | WORKMAN PART No. | REMARKS |
| R4 | 56K | | | | R29 | 47K 1W | | | |
| R5 | 56K | | | | R30 | 560Ω 5% | | | |
| R6 | 1meg | | | | R31 | 47K | | | |
| R7 | 10K | | | | R32 | 100K | | | |
| R8 | 470K | | | | R33 | 27K | | | |
| R9 | 215K 5% | | | | R34 | 220K | | | |
| R10 | 1620Ω 5% | | | | R35 | 560K | | | |
| R11 | 180K | | | | R36 | 68K 1W | | | |
| R12 | 560K | | | | R37 | 430Ω | | | |
| R13 | 47K 1W | | | | R38 | 470K | | | |
| R14 | 560Ω 1W 5% | | | | R39 | 33K | | | |
| R15 | 2.2meg | | | | R40 | 100K | | | |
| R16 | 160K 5% | | | | R41 | 100K | | | |
| R17 | 2400Ω 5% | | | | R42 | 1000Ω | | | |
| R18 | 1600Ω 5% | | | | R43 | 4.7meg | | | |
| R19 | 24K 5% | | | | R44 | 1meg | | | |
| R20 | 56K 5% | | | | R45 | 680K | | | |
| R21 | 100K 5% | | | | R46 | 68K | | | |
| R22 | 270K 5% | | | | R47 | 150K | | | |
| R23 | 62K 5% | | | | | | | | |
| R24 | 215K 5% | | | | R48 | 470K | | | |
| R25 | 1620Ω 5% | | | | R49 | 68K | | | |
| R26 | 68K | | | | R50 | 100K | | | |
| R27 | 180K | | | | R51 | 150K | | | |
| R28 | 560K | | | | R52 | 220K | | | |



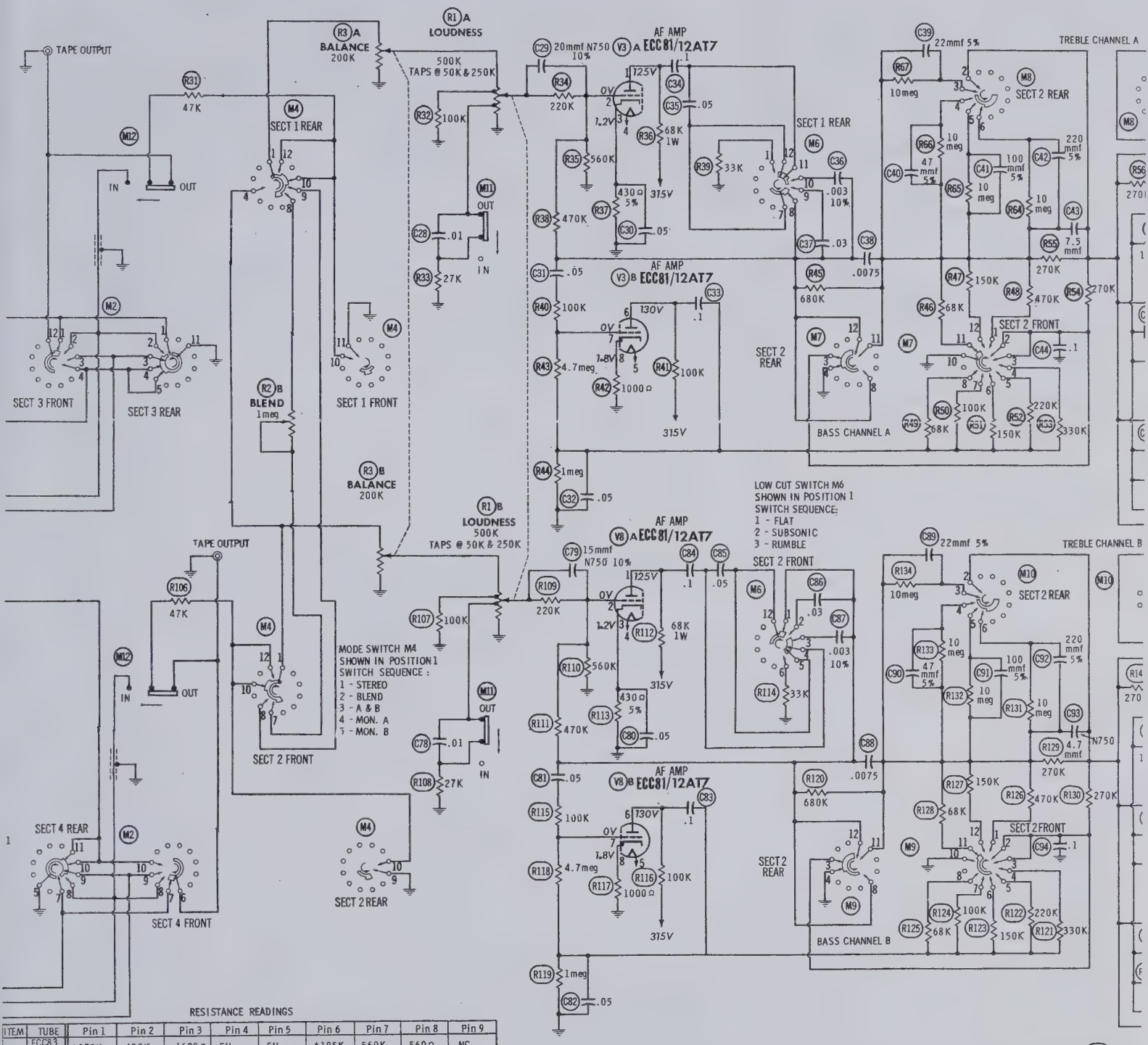

| ITEM | TUBE | Pin 1 | |
|---|---|---|---|
| V1 | ECC83 12AX7 | †275K | 4 |
| V2 | ECC83 12AX7 | †227K | ▲ ■ |
| V3 | ECC81 12AT7 | †70K | 1 |
| V4 | ECC81 12AT7 | †70K | 1 |
| V5 | ECC81 12AT7 | †70K | 4 |
| V6 | ECC83 12AX7 | †275K | 4 |
| V7 | ECC83 12AX7 | †227K | ■ |
| V8 | ECC81 12AT7 | †70K | 1 |
| V9 | ECC81 12AT7 | †70K | 1 |

VOLTAGES MEASURED IN "A
† MEASURED FROM OUT
▲ MEASURED IN "TAPE"

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

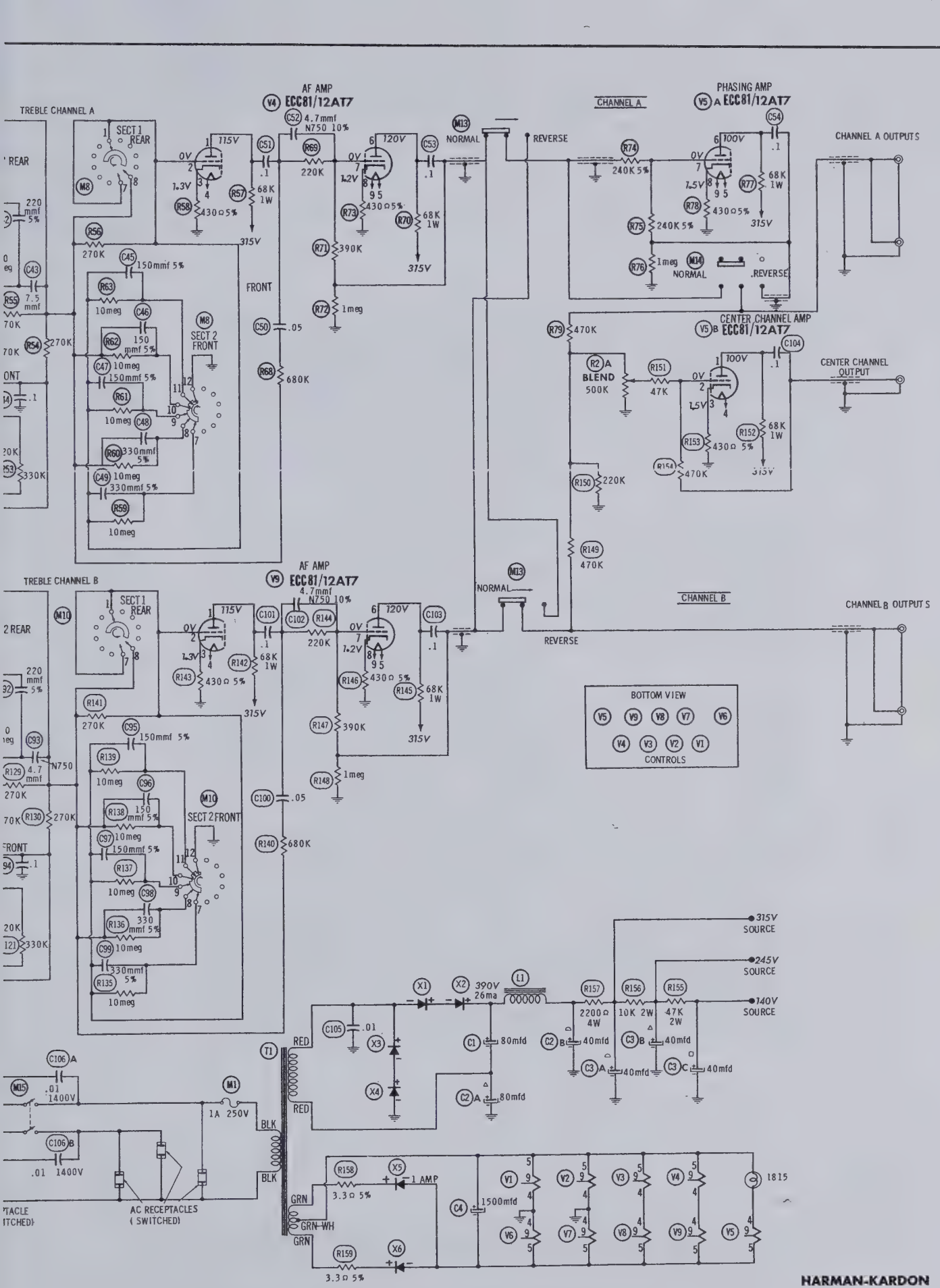
A PHOTOFACT STANDARD NOTATION SCHEMATIC
©Howard W. Sams & Co., Inc. 1962



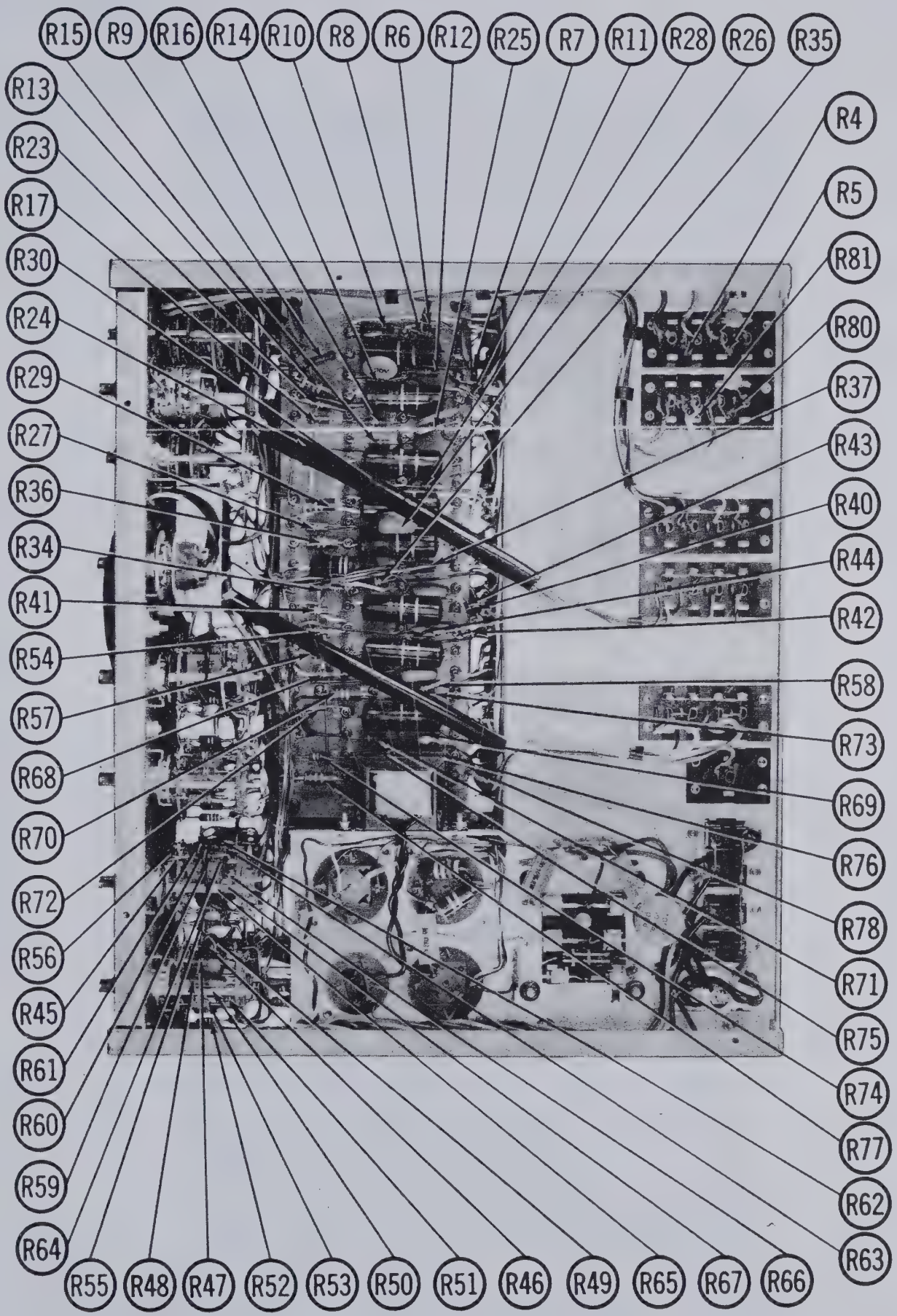

RESISTANCE READINGS

| ITEM | TUBE | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 | Pin 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| V1 | ECC83 12AX7 | †275K | 480K | 1620Ω | FIL | FIL | †105K | 560K | 560Ω | NC |
| V2 | ECC83 12AX7 | †227K | ▲300K ■2.4meg | 1620Ω | FIL | FIL | †59K | 560K | 560Ω | NC |
| V3 | ECC81 12AT7 | †70K | 170K | 430Ω | FIL | FIL | †100K | 5.7meg | 1000Ω | NC |
| V4 | ECC81 12AT7 | †70K | 170K | 430Ω | FIL | FIL | †70K | 800K | 430Ω | NC |
| V5 | ECC81 12AT7 | †70K | 47K | 430Ω | FIL | FIL | †70K | 500K | 430Ω | NC |
| V6 | ECC83 12AX7 | †275K | 480K | 1620Ω | FIL | FIL | †105K | 560K | 560Ω | NC |
| V7 | ECC83 12AX7 | †227K | ● 130K | 1620Ω | FIL | FIL | †59K | 560K | 560Ω | NC |
| V8 | ECC81 12AT7 | †70K | 170K | 430Ω | FIL | FIL | †100K | 5.7meg | 1000Ω | NC |
| V9 | ECC81 12AT7 | †70K | 170K | 430Ω | FIL | FIL | †70K | 800K | 430Ω | NC |

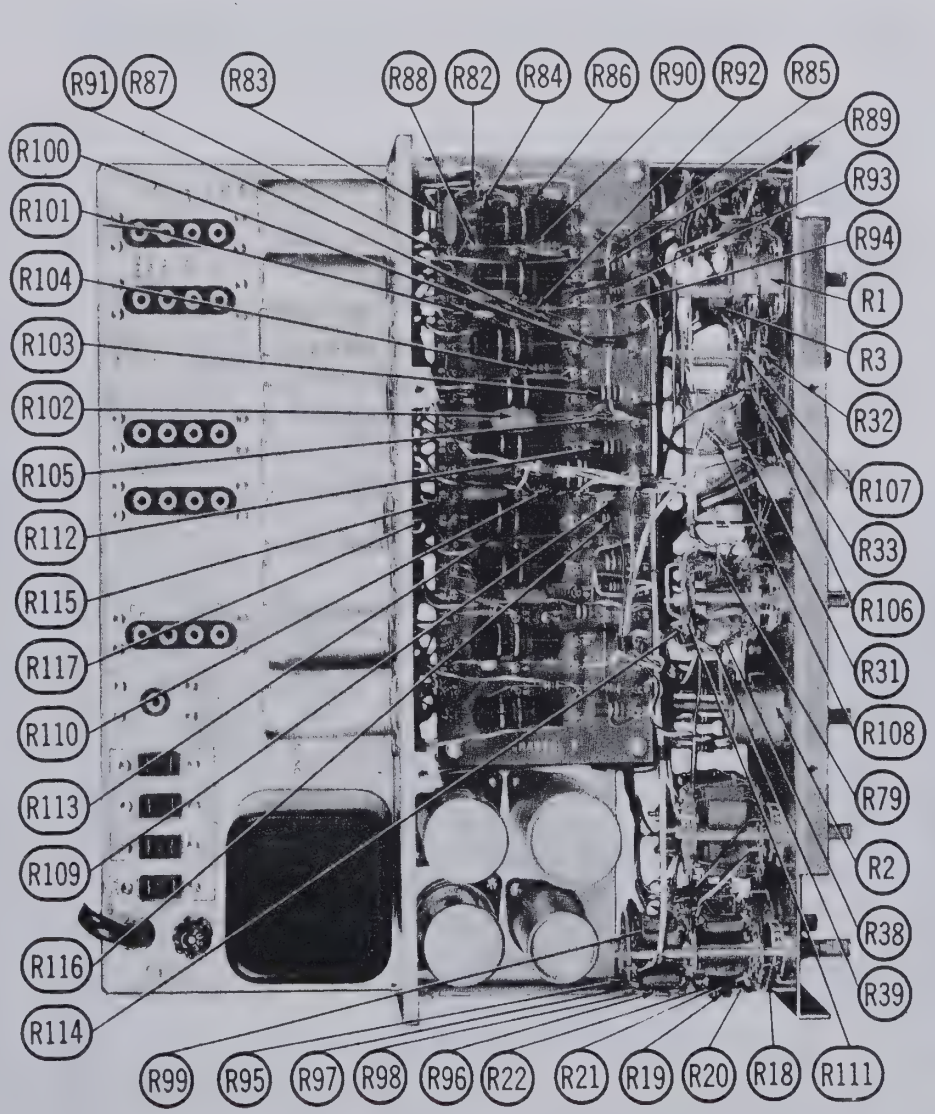
VOLTAGES MEASURED IN "AUXILIARY" POSITION, TURNOVER SW IN R1AA, MODE IN "STEREO".
NC NO CONNECTION
† MEASURED FROM OUTPUT OF X2.
▲ MEASURED IN "TAPE" POSITION ( TURNOVER SW ). ● MEASURED IN "AES, 78" POSITION (TURNOVER SW)

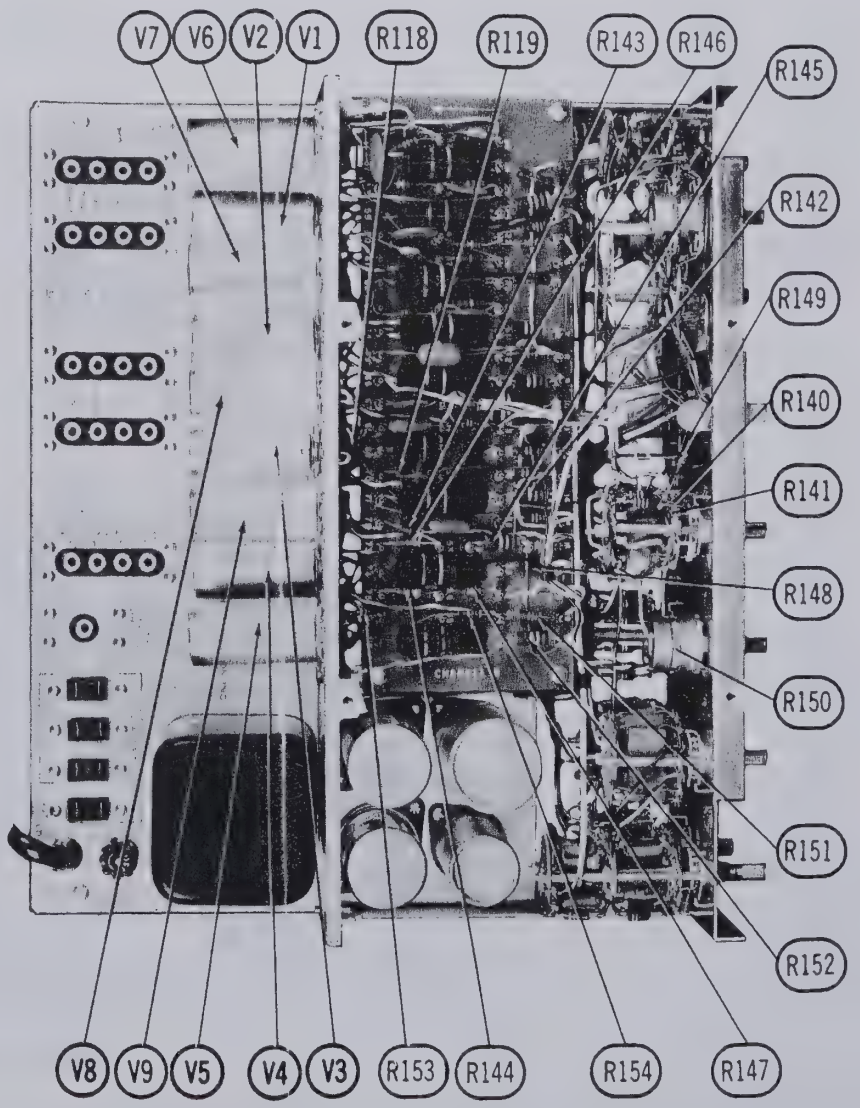



**HARMAN-KARDON**
**MODEL CITATION I**

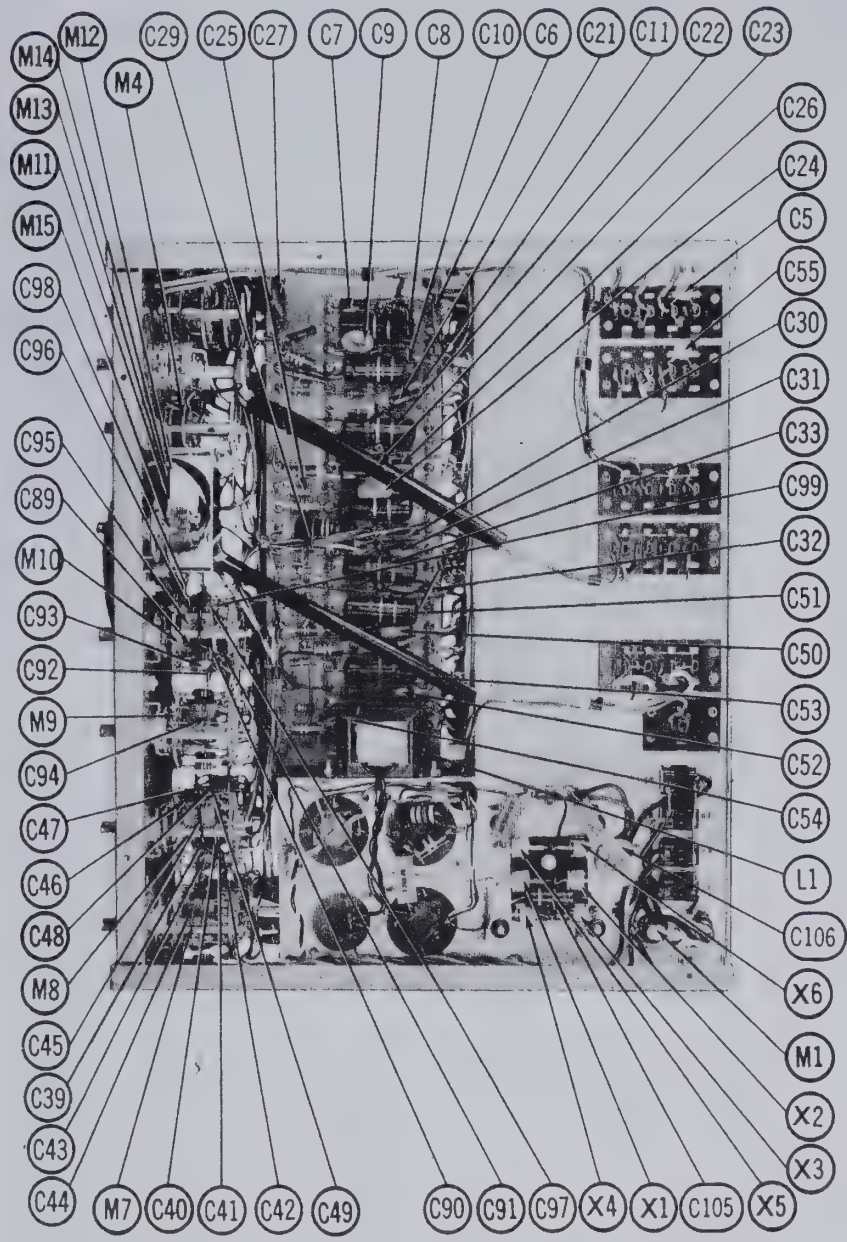



CHASSIS BOTTOM VIEW – RESISTOR IDENT. (R4-81)

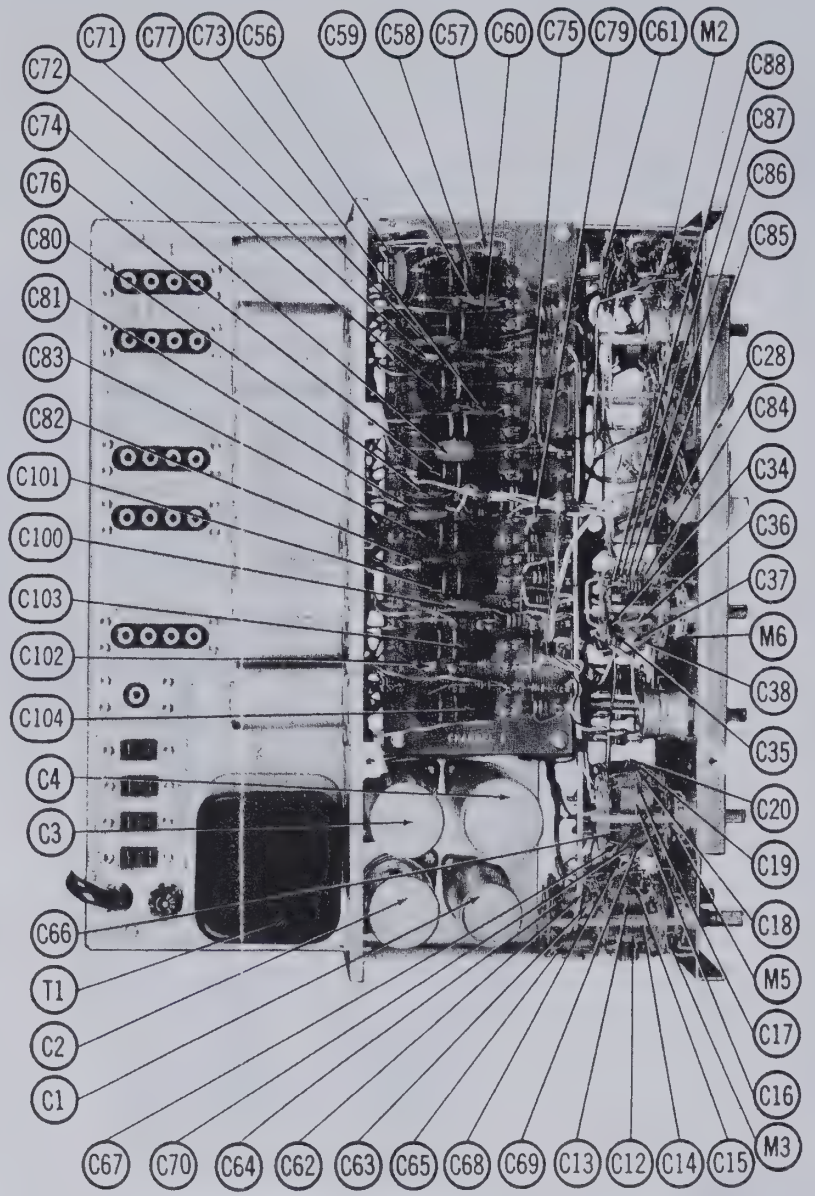



CHASSIS TOP VIEW – RESISTOR IDENT.




BOTTOM VIEW



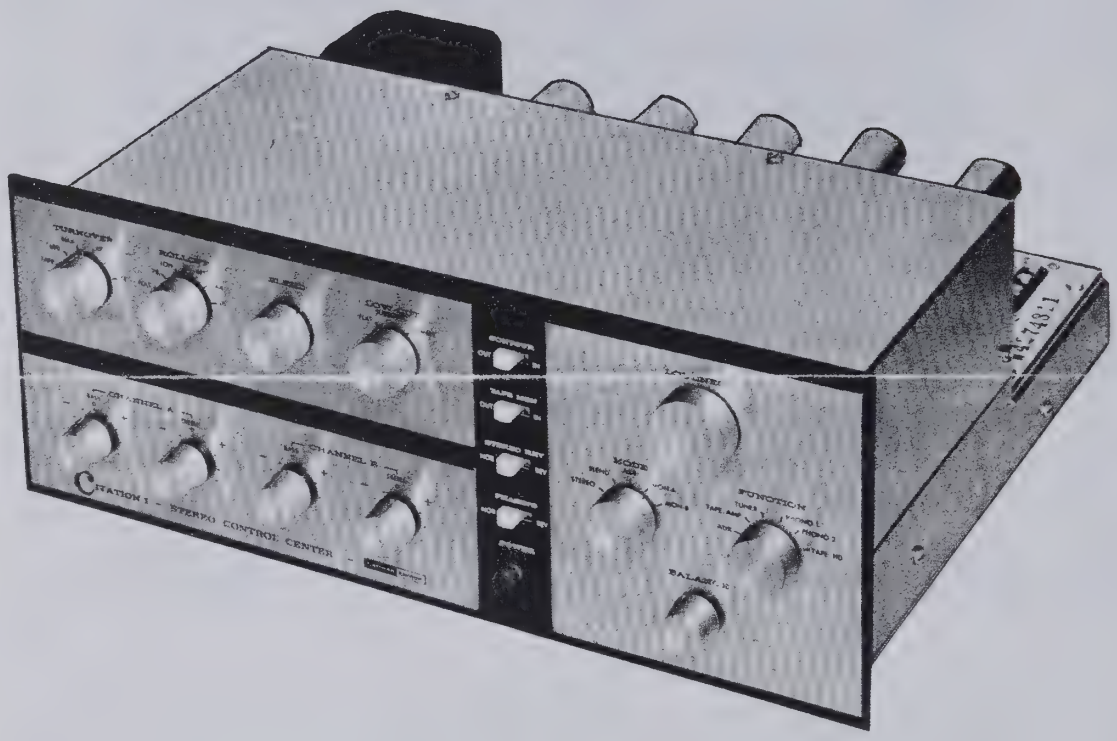

TOP VIEW

CAPACITOR, MISC. & INDUCTOR IDENT.

PHOTOFACT® Folder

**HARMAN-KARDON
MODEL CITATION I**

HARMAN-KARDON
MODEL CITATION I




HARMAN-KARDON
MODEL CITATION I

| | |
|---|---|
| TRADE NAME | Harman-Kardon Model Citation I |
| MANUFACTURER | Harman-Kardon, Inc., Ames Court, Plainview L. I., N. Y. |
| TYPE SET | AC Operated 9 Tube Stereo Preamplifier |
| POWER SUPPLY | 105 — 125 Volts AC, 50-60 Cycles RATING 36 Watts, .36 Amp. @117 Volts AC |

**HOWARD W. SAMS & CO., INC.** Indianapolis 6, Indiana

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LV244

DATE 10 — 62 SET 599 FOLDER 5

SET 599 FOLDER 5

# PARTS LIST AND DESCRIPTIONS (Continued)

## RESISTORS (cont)

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | RATING | REPLACEMENT DATA | | |
|---|---|---|---|---|
| | | IRC PART No. | WORKMAN PART No. | REMARKS |
| R53 | 330K | | | |
| R54 | 270K | | | |
| R55 | 270K | | | |
| R56 | 270K | | | |
| R57 | 68K 1W | | | |
| R58 | 430Ω 5% | | | |
| R59 | 10meg | | | |
| R60 | 10meg | | | |
| R61 | 10meg | | | |
| R62 | 10meg | | | |
| R63 | 10meg | | | |
| R64 | 10meg | | | |
| R65 | 10meg | | | |
| R66 | 10meg | | | |
| R67 | 10meg | | | |
| R68 | 680K | | | |
| R69 | 220K | | | |
| R70 | 68K 1W | | | |
| R71 | 390K | | | |
| R72 | 1meg | | | |
| R73 | 430Ω 5% | | | |
| R74 | 240K 5% | | | |
| R75 | 240K 5% | | | |
| R76 | 1meg | | | |
| R77 | 68K 1W | | | |
| R78 | 430Ω 5% | | | |
| R79 | 470K | | | |
| R80 | 56K | | | |
| R81 | 56K | | | |
| R82 | 1meg | | | |
| R83 | 10K | | | |
| R84 | 470K | | | |
| R85 | 215K 5% | | | |
| R86 | 1620Ω 5% | | | |
| R87 | 180K | | | |
| R88 | 560K | | | |
| R89 | 47K 1W | | | |
| R90 | 560Ω 5% 1W | | | |
| R91 | 2.2meg | | | |
| R92 | 160K 5% | | | |
| R93 | 62K 5% | | | |
| R94 | 2400Ω 5% | | | |
| R95 | 1600Ω 5% | | | |
| R96 | 24K 5% | | | |
| R97 | 56K 5% | | | |
| R98 | 100K 5% | | | |
| R99 | 270K 5% | | | |
| R100 | 215K 5% | | | |
| R101 | 1620Ω 5% | | | |
| R102 | 68K | | | |
| R103 | 47K 1W | | | |
| R104 | 560Ω 5% 1W | | | |
| R105 | 180K | | | |
| R106 | 47K | | | |

| ITEM No. | RATING | REPLACEMENT DATA | | |
|---|---|---|---|---|
| | | IRC PART No. | WORKMAN PART No. | REMARKS |
| R107 | 100K | | | |
| R108 | 27K | | | |
| R109 | 220K | | | |
| R110 | 560K | | | |
| R111 | 470K | | | |
| R112 | 68K 1W | | | |
| R113 | 430Ω 5% | | | |
| R114 | 33K | | | |
| R115 | 100K | | | |
| R116 | 100K | | | |
| R117 | 1000Ω | | | |
| R118 | 4.7meg | | | |
| R119 | 1meg | | | |
| R120 | 680K | | | |
| R121 | 330K | | | |
| R122 | 220K | | | |
| R123 | 150K | | | |
| R124 | 100K | | | |
| R125 | 68K | | | |
| R126 | 470K | | | |
| R127 | 150K | | | |
| R128 | 68K | | | |
| R129 | 270K | | | |
| R130 | 270K | | | |
| R131 | 10meg | | | |
| R132 | 10meg | | | |
| R133 | 10meg | | | |
| R134 | 10meg | | | |
| R135 | 10meg | | | |
| R136 | 10meg | | | |
| R137 | 10meg | | | |
| R138 | 10meg | | | |
| R139 | 10meg | | | |
| R140 | 680K | | | |
| R141 | 270K | | | |
| R142 | 68K 1W | | | |
| R143 | 430Ω 5% | | | |
| R144 | 220K | | | |
| R145 | 68K 1W | | | |
| R146 | 430Ω 5% | | | |
| R147 | 390K | | | |
| R148 | 1meg | | | |
| R149 | 470K | | | |
| R150 | 220K | | | |
| R151 | 47K | | | |
| R152 | 68K 1W | | | |
| R153 | 430Ω 5% | | | |
| R154 | 470K | | | |
| R155 | 47K 2W | | | |
| R156 | 10K 2W | | | |
| R157 | 2200Ω 4W | PW4-2200 | 5W-SQ-2200 | |
| R158 | 3.3Ω 5% | | | |
| R159 | 3.3Ω 5% | | | |
| R160 | 560K | | | |

## FILTER CHOKE

| ITEM No. | RATINGS | | | REPLACEMENT DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | CURRENT (Measured) | DC RES. | INDUCTANCE (0 CURRENT 1000~) | Harman-Kardon PART No. | MERIT PART No. | STANCOR PART No. | THORDARSON PART No. | TRIAD PART No. | |
| L1 | .026A | 600Ω | 17HY | FC3283956 | | | | | |

## TRANSFORMER (POWER)

| ITEM No. | RATING | | | REPLACEMENT DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. 1 | SEC. 2 | Harman-Kardon PART No. | MERIT PART No. | STANCOR PART No. | THORDARSON PART No. | TRIAD PART No. | |
| T1 | 117V @ .38A | 145V @ .110A AC | 46VCT @ 1A AC | FT3281735 | | | | | |

## FUSES

| ITEM No. | TYPE | RATING | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Harman-Kardon PART No. | | LITTELFUSE PART No. | | BUSS PART No. | |
| | | | FUSE | HOLDER | FUSE | HOLDER | FUSE | HOLDER |
| M1 | 3AG | 1A 250V | ZCOM3006 | | 312001 (3AG 1A 250V) | 342001 | AGC1 | HKP |

## MISCELLANEOUS

| ITEM No. | PART NAME | Harman-Kardon PART No. | NOTES |
|---|---|---|---|
| M2 | Switch | ER3284122 | Function (Rotary Wafer Type) |
| M3 | Switch | ER3284117 | Turnover (Rotary Wafer Type) |
| M4 | Switch | ER3284119 | Mode (Rotary Wafer Type) |
| M5 | Switch | ER3284118 | Roll Off (Rotary Wafer Type) |
| M6 | Switch | ER3283938 | Low Cut (Rotary Wafer Type) |
| M7 | Switch | ER3283709 | Bass (Rotary Wafer Type, Channel A) |
| M8 | Switch | ER3283710 | Treble (Rotary Wafer Type, Channel A) |
| M9 | Switch | ER3283709 | Bass (Rotary Wafer Type, Channel B) |
| M10 | Switch | ER3283710 | Treble (Rotary Wafer Type, Channel B) |
| M11 | Switch | ESCOM3902 | Contour, (DPDT Slide Type) |
| M12 | Switch | ESCOM3902 | Tape Monitor (DPDT Slide Type) |
| M13 | Switch | ESCOM3902 | Stereo-Reverse (DPDT Slide Type) |
| M14 | Switch | ESCOM3902 | Phase (DPDT Slide Type) |
| M15 | Switch | ER3283764 | Power (Rotary Type) |

## WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in 12 Colors
8524 (Stranded) Available in 12 Colors

Power Cord ..... Use BELDEN No. 17106 (Plastic) or 17126 (Rubber) - 6 Ft.
17109 (Plastic) or 17129 (Rubber) - 9 Ft.

Power Cord (Interlock Type) ..... Use BELDEN No. 8874 (Rubber) or 8895 (Plastic)

# PARTS LIST AND DESCRIPTIONS (Continued)

## FIXED CAPACITORS (cont)

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
| C22 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C23 | .05 | | BPD-05 | DD-503 | H-05S5 | 1DP-2-503 | GP150 | 5HK-S50 |
| C24 | .2 100V | | P288N-2 | | CUB2P22 | 1DP-3-204 | GEM-2022 | 2TM-P22 |
| C25 | 6.8 10% | | NPO-DI 6.8 | DTZ-6R8 | C10V68C | CCTO-6R8 | CNO-568 | 10TCC-V68 |
| C26 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C27 | .47mfd 10V | | | UK10-474 | | | | HY-330 |
| C28 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C29 | 20 N750 10% | (15) † | N750-DI 20 | DTN-20 | C10Q2U | CCTN-220 | CN7-420 | 10TCU-Q20 |
| C30 | .05 | | BPD-05 | DD-503 | H-05S5 | 1DP-2-503 | GP150 | 5HK-S50 |
| C31 | .05 100V | | P288N-05 | DD-503 | CUB2S5 | 1DP-2-503 | GEM-415 | 2TM-S50 |
| C32 | .05 | | BPD-05 | DD-503 | H-05S5 | 1DP-2-503 | GP150 | 5HK-S50 |
| C33 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C34 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C35 | .05 100V | | P288N-05 | DD-503 | CUB2S5 | 1DP-2-503 | GEM-415 | 2TM-S50 |
| C36 | .003 10% | | DI-3000 | | 1R5D3 | CCD-302 | JL-233 | 10TS-D30 |
| C37 | .03 100V | | P288N-03 | DD-303 | CUB6S3 | 1DP-1-303 | GEM-413 | 4TM-S30 |
| C38 | .0075 100V | | P288N-0075 | DD-752 | DPMS6D75 | 1DP-1-752 | GP275 | 6PS-D75 |
| C39 | 22 5% | | 1469-000022 | TCZ-22 | 22R5Q22 | CM-19B-220J | CNO-422 | MS-422 |
| C40 | 47 5% | | 1469-000047 | TCZ-47 | 22R5Q47 | CM-19B-470J | CNO-447 | MS-447 |
| C41 | 100 5% | | 1469-0001 | TCZ-100 | 22R5T1 | CM-19B-101J | CNO-310 | MS-310 |
| C42 | 220 5% | | 1469-00022 | TCZ-220 | 22R5T22 | CM-19B-221J | CNO-322 | MS-322 |
| C43 | 7.5 | (4.7) † | | | | | | |
| C44 | .1 200V | | P288N-1 | DF-104 | CUB2P1 | 2DP-3-104 | GEM-201 | 2TM-P10 |
| C45 | 150 5% | | 1469-00015 | TCZ-150 | 22R5T15 | CM-19B-151J | MCE236 | MS-315 |
| C46 | 150 5% | | 1469-00015 | TCZ-150 | 22R5T15 | CM-19B-151J | MCE236 | MS-315 |
| C47 | 150 5% | | 1469-00015 | TCZ-150 | 22R5T15 | CM-19B-151J | MCE236 | MS-315 |
| C48 | 330 5% | | 1469-00033 | | 5R5T33 | CM-19B-331J | MCE241 | MS-333 |
| C49 | 330 5% | | 1469-00033 | | 5R5T33 | CM-19B-331J | MCE241 | MS-333 |
| C50 | .05 100V | | P288N-05 | DD-503 | CUB2S5 | 1DP-2-503 | GEM-415 | 2TM-S50 |
| C51 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C52 | 4.7 N750 10% | | | DTN-5 | C10V5U | CCTN-050 | CN7-547 | 10TCU-V50 |
| C53 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C54 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C55 | 100 N150 10% | | | | | * | | 10TCP-T10 |
| C56 | .47mfd 10V | | | UK10-474 | | | | HY-330 |
| C57 | .001 10% | | DI-1000 | DD-102 | PM6D1 | CCD-102 | GP210 | 10TS-D10 |
| C58 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C59 | .05 | | BPD-05 | DD-503 | H-05S5 | 1DP-2-503 | GP150 | 5HK-S50 |
| C60 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C61 | .47mfd 10V | | | UK10-474 | | | | HY-330 |
| C62 | .03 100V | | P288N-03 | DD-303 | CUB6S3 | 1DP-1-303 | GEM-413 | 4TM-S30 |
| C63 | .05 100V | | P288N-05 | DD-503 | CUB2S5 | 1DP-2-503 | GEM-415 | 2TM-S50 |
| C64 | .02 100V | | P288N-02 | DD-203 | CUB2S2 | 1DP-1-203 | GEM-412 | 2TM-S20 |
| C65 | .05 100V | | P288N-05 | DD-503 | CUB2S5 | 1DP-2-503 | GEM-415 | 2TM-S50 |
| C66 | 330 5% | | 1469-00033 | | 5R5T33 | CM-19B-331J | MCE241 | MS-333 |
| C67 | 220 5% | | 1469-00022 | TCZ-220 | 22R5T22 | CM-19B-221J | CNO-322 | MS-322 |
| C68 | 470 5% | | 1469-00047 | | 5R5T47 | CM-19B-471J | MCJ244 | MS-347 |
| C69 | 330 5% | | 1469-00033 | | 5R5T33 | CM-19B-331J | MCE241 | MS-333 |
| C70 | 220 5% | | 1469-00022 | TCZ-220 | 22R5T22 | CM-19B-221J | CNO-322 | MS-322 |
| C71 | .001 10% | | DI-1000 | DD-102 | PM6D1 | CCD-102 | GP210 | 10TS-D10 |
| C72 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C73 | .05 | | BPD-05 | DD-503 | H-05S5 | 1DP-2-503 | GP150 | 5HK-S50 |
| C74 | .2 100V | | P488N-2 | | CUB2P22 | 1DP-3-204 | GEM-2022 | 2TM-P22 |
| C75 | 6.8 10% | | NPO-DI 6.8 | DTZ-6R8 | C10V68C | CCTO-6R8 | CNO-568 | 10TCC-V68 |
| C76 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C77 | .47mfd 10V | | | UK10-474 | | | | HY-330 |
| C78 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C79 | 15 N750 10% | | N750-DI 15 | DTN-15 | C10Q15U | CCTN-150 | CN7-415 | 10TCU-Q15 |
| C80 | .05 | | BPD-05 | DD-503 | H-05S5 | 1DP-2-503 | GP150 | 5HK-S50 |
| C81 | .05 100V | | P288N-05 | DD-503 | CUB2S5 | 1DP-2-503 | GEM-415 | 2TM-S50 |
| C82 | .05 | | BPD-05 | DD-503 | H-05S5 | 1DP-2-503 | GP150 | 5HK-S50 |
| C83 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C84 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C85 | .05 100V | | P288N-05 | DD-503 | CUB2S5 | 1DP-2-503 | GEM-415 | 2TM-S50 |
| C86 | .03 100V | | P288N-03 | DD-303 | CUB6S3 | 1DP-1-303 | GEM-413 | 4TM-S30 |
| C87 | .003 10% | | DI-3000 | | 1R5D3 | CCD-302 | JL-233 | 10TS-D30 |
| C88 | .0075 100V | | P288N-0075 | DD-752 | DPMS6D75 | 1DP-1-752 | GP275 | 6PS-D75 |
| C89 | 22 5% | | 1469-000022 | TCZ-22 | 22R5Q22 | CM-19B-220J | CNO-422 | MS-422 |
| C90 | 47 5% | | 1469-000047 | TCZ-47 | 22R5Q47 | CM-19B-470J | CNO-447 | MS-447 |

## FIXED CAPACITORS (cont)

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
| C91 | 100 5% | | 1469-0001 | TCZ-100 | 22R5T1 | CM-19B-101J | CNO-310 | MS-310 |
| C92 | 220 5% | | 1469-00022 | TCZ-220 | 22R5T22 | CM-19B-221J | CNO-322 | MS-322 |
| C93 | 4.7 N750 10% | | | DTN-5 | C10V5U | CCTN-050 | CN7-547 | 10TCU-V50 |
| C94 | .1 200V | | P288N-1 | DF-104 | CUB2P1 | 2DP-3-104 | GEM-201 | 2TM-P10 |
| C95 | 150 5% | | 1469-00015 | TCZ-150 | 22R5T15 | CM-19B-151J | MCE236 | MS-315 |
| C96 | 150 5% | | 1469-00015 | TCZ-150 | 22R5T15 | CM-19B-151J | MCE236 | MS-315 |
| C97 | 150 5% | | 1469-00015 | TCZ-150 | 22R5T15 | CM-19B-151J | MCE236 | MS-315 |
| C98 | 330 5% | | 1469-00033 | | 5R5T33 | CM-19B-331J | MCE241 | MS-333 |
| C99 | 330 5% | | 1469-00033 | | 5R5T33 | CM-19B-331J | MCE241 | MS-333 |
| C100 | .05 100V | | P288N-05 | DD-503 | CUB2S5 | 1DP-2-503 | GEM-415 | 2TM-S50 |
| C101 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C102 | 4.7 N750 10% | | | DTN-5 | C10V5U | CCTN-050 | CN7-547 | 10TCU-V50 |
| C103 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C104 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C105 | .01 400V | | P488N-01 | D6-103 | CUB4S1 | 4DP-1-103 | GEM-411 | 4TM-S10 |
| C106A | .01 1400V | | DAC-27 | DD16-103 | HVE16S1 | 16DP-3-103 | UAC-2X110 | BL-S10 |
| B | .01 1400V | | DAC-27 | DD16-103 | HVE16S1 | 16DP-3-103 | | BL-S10 |

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
† Alternate.

## CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | USE | RESISTANCE | REPLACEMENT DATA | | | | |
|---|---|---|---|---|---|---|---|
| | | | Harman-Kardon PART No. | CENTRALAB PART No. | CLAROSTAT PART No. | CTS-IRC PART No. | MALLORY PART No. |
| R1A | Loudness, Channel A | 500K* | RV3285193 | BT-160, STR-160, or (ABT-160, STR-160, AK-11) | | | |
| B | Loudness, Channel B | 500K* | | | | | |
| R2A | Blend, Cent. Channel | 500K | RV3283746 | B-60, SR-70, or (AB-60, SR-70, AK-11) | | | FA55A, RU16A, CS3500 |
| B | Blend, Channels A & B | 1meg | | | | | |
| R3A | Balance, Chanel A | 200K | RV3284133 | B-51, SR-513, or (AB-51, SR-513, AK-11) | | | |
| B | Balance, Channel B | 200K | | | | | |

* Taps @ 50K & 250K.

## RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | RATING | REPLACEMENT DATA | | | ITEM No. | RATING | REPLACEMENT DATA | | |
|---|---|---|---|---|---|---|---|---|---|
| | | IRC PART No. | WORKMAN PART No. | REMARKS | | | IRC PART No. | WORKMAN PART No. | REMARKS |
| R4 | 56K | | | | R29 | 47K 1W | | | |
| R5 | 56K | | | | R30 | 560Ω 5% | | | |
| R6 | 1meg | | | | R31 | 47K | | | |
| R7 | 10K | | | | R32 | 100K | | | |
| R8 | 470K | | | | R33 | 27K | | | |
| R9 | 215K 5% | | | | R34 | 220K | | | |
| R10 | 1620Ω 5% | | | | R35 | 560K | | | |
| R11 | 180K | | | | R36 | 68K 1W | | | |
| R12 | 560K | | | | R37 | 430Ω | | | |
| R13 | 47K 1W | | | | R38 | 470K | | | |
| R14 | 560Ω 1W 5% | | | | R39 | 33K | | | |
| R15 | 2.2meg | | | | R40 | 100K | | | |
| R16 | 160K 5% | | | | R41 | 100K | | | |
| R17 | 2400Ω 5% | | | | R42 | 1000Ω | | | |
| R18 | 1600Ω 5% | | | | R43 | 4.7meg | | | |
| R19 | 24K 5% | | | | R44 | 1meg | | | |
| R20 | 56K 5% | | | | R45 | 680K | | | |
| R21 | 100K 5% | | | | R46 | 68K | | | |
| R22 | 270K 5% | | | | R47 | 150K | | | |
| R23 | 62K 5% | | | | | | | | |
| R24 | 215K 5% | | | | R48 | 470K | | | |
| R25 | 1620Ω 5% | | | | R49 | 68K | | | |
| R26 | 68K | | | | R50 | 100K | | | |
| R27 | 180K | | | | R51 | 150K | | | |
| R28 | 560K | | | | R52 | 220K | | | |

# PARTS LIST AND DESCRIPTIONS

## TUBES

AMPEREX - GENERAL ELECTRIC - RAYTHEON - SYLVANIA

| ITEM No. | USE | TYPE | ITEM No. | USE | TYPE |
|---|---|---|---|---|---|
| V1 | Channel A Preamp. | ECC83/12AX7 | V6 | Channel B Preamp. | ECC83/12AX7 |
| V2 | Channel A Preamp. | ECC83/12AX7 | V7 | Channel B Preamp. | ECC83/12AX7 |
| V3 | Channel A AF Amp. | ECC81/12AT7 | V8 | Channel B AF Amp. | ECC81/12AT7 |
| V4 | Channel A AF Amp. | ECC81/12AT7 | V9 | Channel B AF Amp. | ECC81/12AT7 |
| V5 | Phasing Amp. - Center Channel Amp. | ECC81/12AT7 | | | |

## POWER RECTIFIERS & SIGNAL DIODES

| ITEM No. | CURRENT RATING (Measured) | ORIGINAL Part or Type No. | RECTIFIERS | | DIODES | NOTES |
|---|---|---|---|---|---|---|
| | | | RCA PART No. | SARKES TARZIAN PART No. | RAYTHEON PART No. | |
| X1 | .026A | | | 30H | | |
| X2 | .026A | | | 30H | | |
| X3 | .026A | | | 30H | | |
| X4 | .026A | | | 30H | | |
| X5 | 1A | | | 10H | | |
| X6 | 1A | | | 10H | | |

## ELECTROLYTIC CAPACITORS

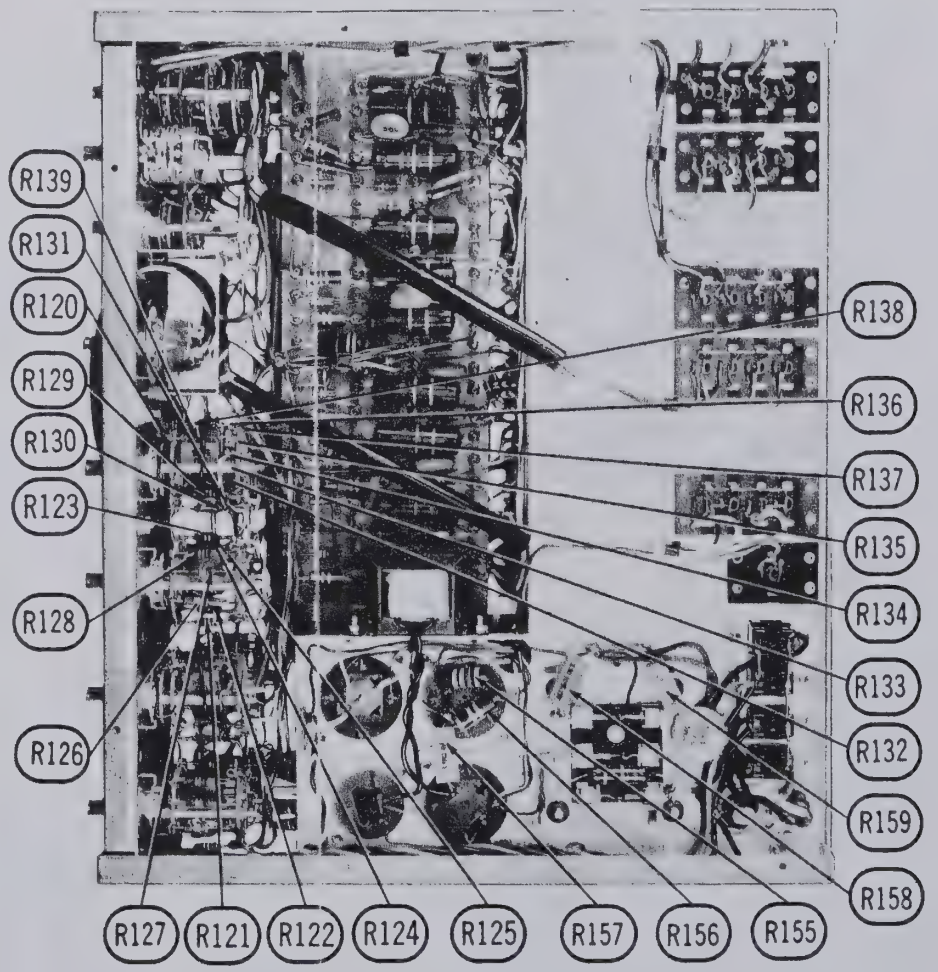
| ITEM No. | RATING CAP. | RATING VOLT. | REPLACEMENT DATA Harman-Kardon PART No. | AEROVOX PART No. | CORNELL-DUBILIER PART No. | GENERAL ELECTRIC PART No. | MALLORY PART No. | PYRAMID PART No. | SPRAGUE PART No. |
|---|---|---|---|---|---|---|---|---|---|
| C1 | 80 | 250 | JE3283788 | AFH1-31 | A0310 | XC1-11 | FP128 | TMS-1470 | TVL-1535 |
| C2A | ▲80 | 250 | JE3284144 | AFH2-64 | B0480 | XC2-28 | FP377.1 | TMD-2690 | TVL-2778 |
| B | ▲40 | 450 | | | | | | | |
| C3A | ▲40 | 450 | JE3283786 | AFH3-44 | C0350 | XC3-40 | FP377.1 | TMT-3748 | TVL-3787 |
| B | ▲40 | 450 | | | | | | | |
| C | ■40 | 450 | | | | | | | |
| C4 | 1500 | 35 | JE3283785 | AFH1-14 | | XC1-27 | WP068 | | TVLS-1240 * |

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

## FIXED CAPACITORS

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
|---|---|---|---|---|---|---|---|---|
| C5 | 100 N150 10% | | | | | * | | 10TCP-T10 |
| C6 | .47 | | | UK10-474 | | | | HY-330 |
| C7 | .001 10% | | DI-1000 | DD-102 | PM6D1 | CCD-102 | GP210 | 10TS-D10 |
| C8 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C9 | .05 | | BPD-05 | DD-503 | H-05S5 | 1DP-2-503 | GP150 | 5HK-S10 |
| C10 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C11 | .47mfd 10V | | | UK10-474 | | | | HY-330 |
| C12 | .02 100V | | P288N-02 | DD-203 | CUB2S2 | 1DP-1-203 | GEM-412 | 2TM-S20 |
| C13 | .05 100V | | P288N-05 | DD-503 | CUB2S5 | 1DP-2-503 | GEM-415 | 2TM-S50 |
| C14 | .05 100V | | P288N-05 | DD-503 | CUB2S5 | 1DP-2-503 | GEM-415 | 2TM-S50 |
| C15 | .03 100V | | P288N-03 | DD-303 | CUB6S3 | 1DP-1-303 | GEM-413 | 4TM-S30 |
| C16 | 220 5% | | 1469-00022 | TCZ-220 | 22R5T22 | CM-19B-221J | CNO-322 | MS-322 |
| C17 | 330 5% | | 1469-00033 | | 5R5T33 | CM-19B-331J | MCE241 | MS-333 |
| C18 | 470 5% | | 1469-00047 | | 5R5T47 | CM-19B-471J | MCJ244 | MS-347 |
| C19 | 220 5% | | 1469-00022 | TCZ-220 | 22R5T22 | CM-19B-221J | CNO-322 | MS-322 |
| C20 | 330 5% | | 1469-00033 | | 5R5T33 | CM-19B-331J | MCE241 | MS-333 |
| C21 | .001 10% | | DI-1000 | DD-102 | PM6D1 | CCD-102 | GP210 | 10TS-D10 |

## CHASSIS BOTTOM VIEW-RESISTOR IDENT




# PARTS LIST AND DESCRIPTIONS (Continued)

## FIXED CAPACITORS (cont)

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
|---|---|---|---|---|---|---|---|---|
| C22 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C23 | .05 | | BPD-05 | DD-503 | H-05S5 | 1DP-2-503 | GP150 | 5HK-S50 |

## FIXED CAPACITORS (cont)

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
|---|---|---|---|---|---|---|---|---|
| C91 | 100 5% | | 1469-0001 | TCZ-100 | 22R5T1 | CM-19B-101J | CNO-310 | MS-310 |
| C92 | 220 5% | | 1469-00022 | TCZ-220 | 22R5T22 | CM-19B-221J | CNO-322 | MS-322 |

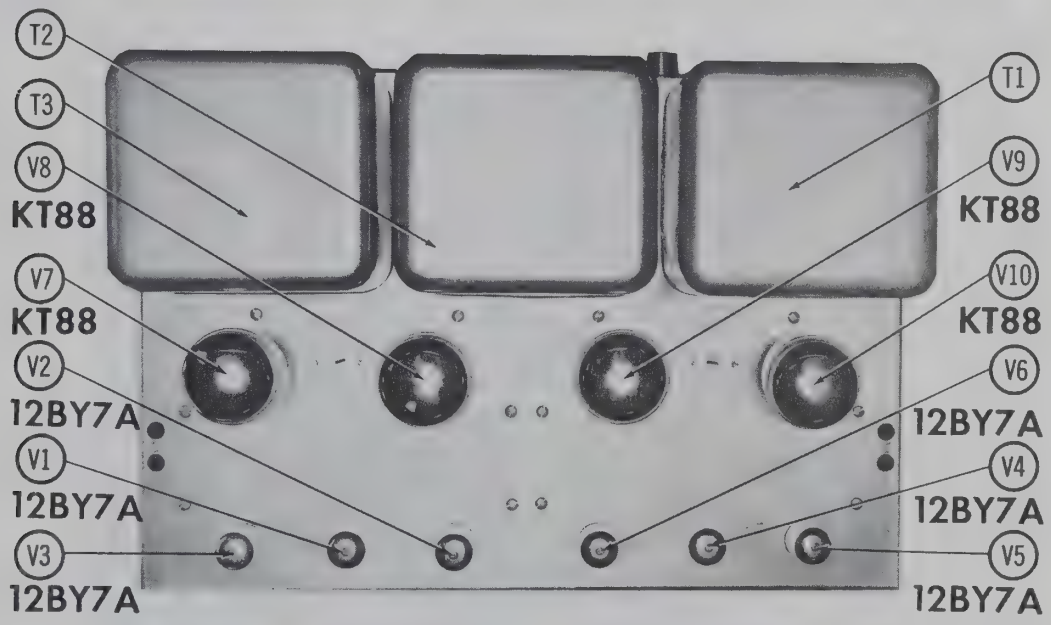
PHOTOFACT® Folder

**HARMAN-KARDON**
**MODEL Citation II**

HARMAN-KARDON
MODEL Citation II



| | |
|---|---|
| TRADE NAME | Harman-Kardon Model Citation II |
| MANUFACTURER | Harman-Kardon, Inc., 520 Main Street, Westbury, L. I., N. Y. |
| TYPE SET | AC Operated 10 Tube Stereo Amplifier |
| POWER SUPPLY | 110 - 125 Volts AC, 60 Cycles RATING 300 Watts, 2.8 Amp. @117 Volts AC |

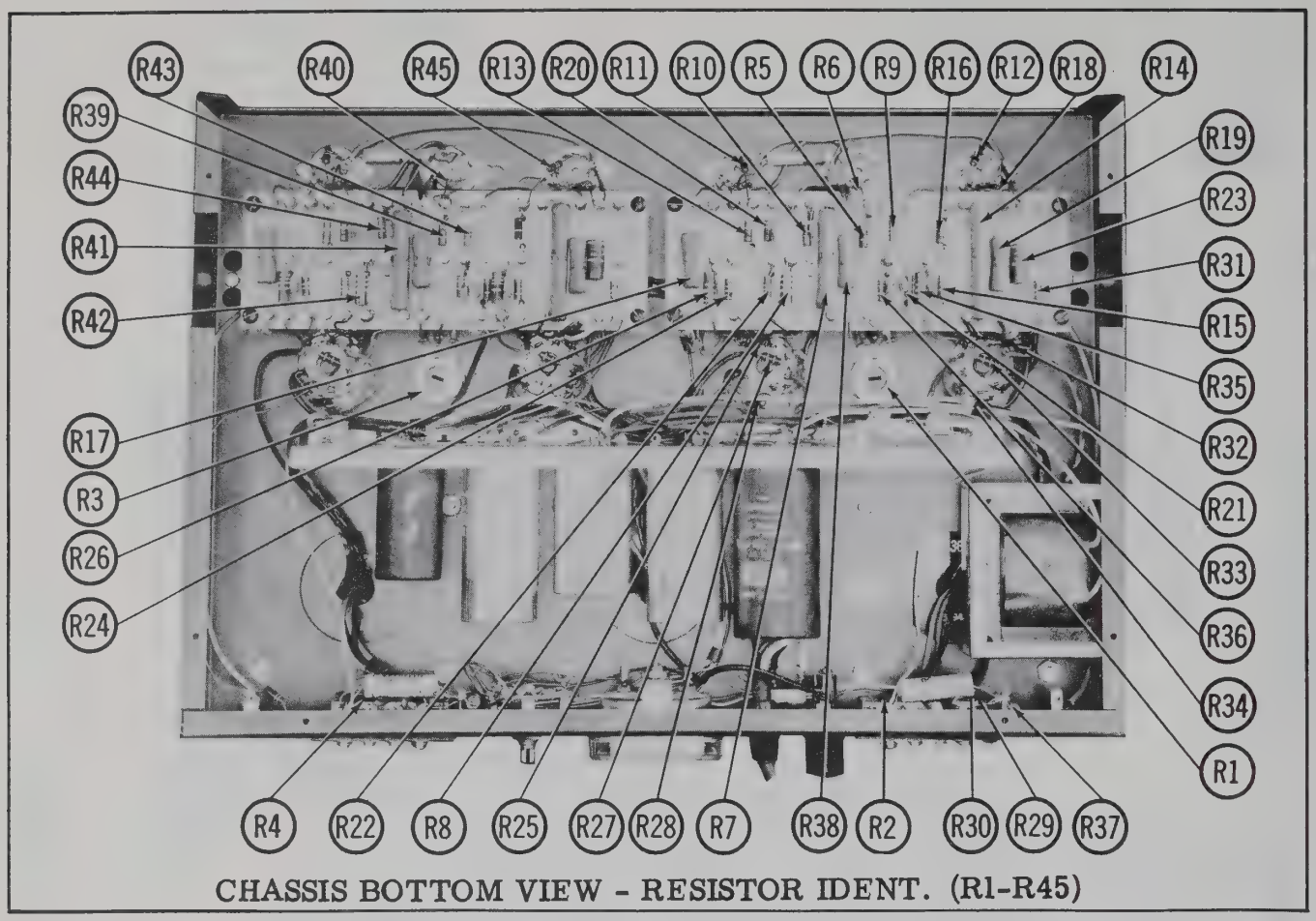



HARMAN-KARDON
MODEL Citation II

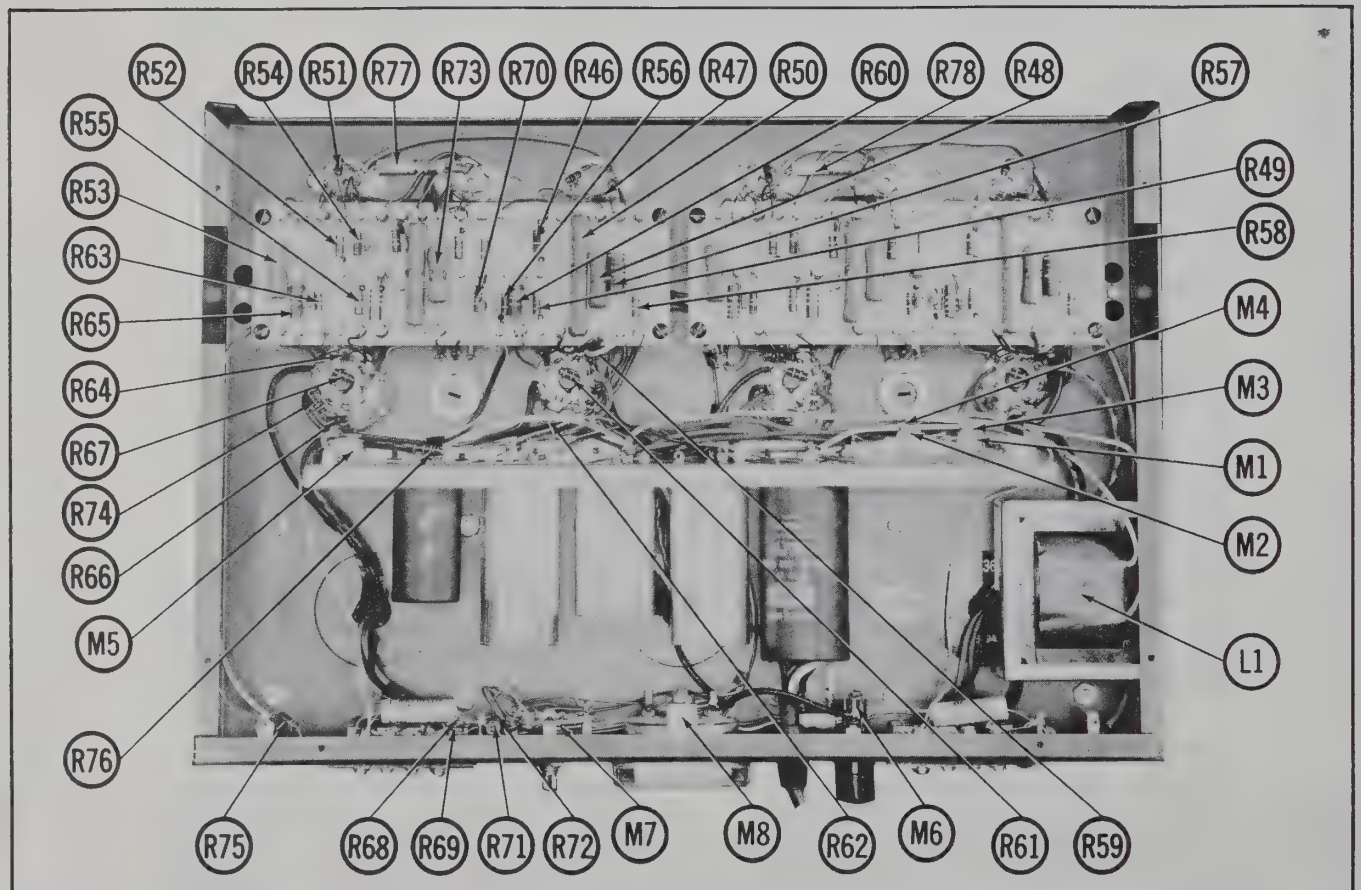
**HOWARD W. SAMS & CO., INC.** Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KV001

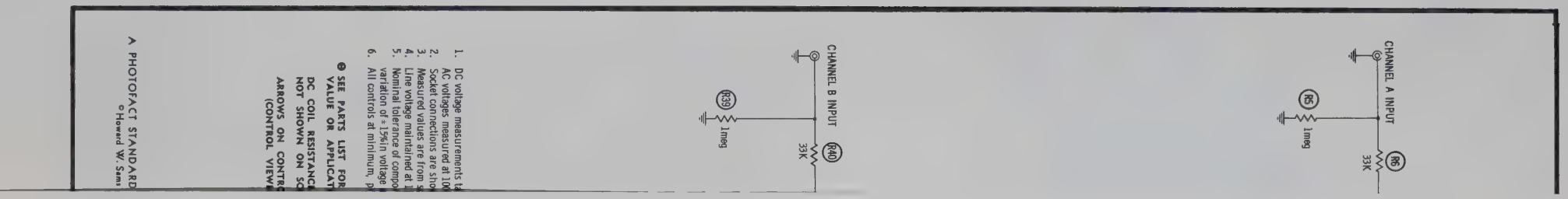
the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America




CHASSIS BOTTOM VIEW - RESISTOR IDENT. (R1-R45)




CHASSIS BOTTOM VIEW - RESISTOR, INDUCTOR & MISC. IDENT.




1. DC voltage measurements ta
2. AC voltages measured at 100
3. Socket connections are sho
4. Measured values are from s
5. Line voltage maintained at 1
6. Nominal tolerance of compo
variation of ±15% in voltage
All controls at minimum, p

▲ PHOTOFACT STANDARD
©Howard W. Sams

● SEE PARTS LIST FOR VALUE OR APPLICAT

DC COIL RESISTANCE NOT SHOWN ON SC

ARROWS ON CONTRO (CONTROL VIEW

# PARTS LIST AND DESCRIPTIONS

## TUBES

| ◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆ | | | | | |
|---|---|---|---|---|---|
| ITEM No. | USE | TYPE | ITEM No. | USE | TYPE |
| V1 | Channel B AF Amp. | 12BY7A | V6 | Channel A Phase Inv. | 12BY7A |
| V2 | Channel B AF Amp. | 12BY7A | V7 | Channel B Output | KT88 |
| V3 | Channel B Phase Inv. | 12BY7A | V8 | Channel B Output | KT88 |
| V4 | Channel A AF Amp. | 12BY7A | V9 | Channel A Output | KT88 |
| V5 | Channel A AF Amp. | 12BY7A | V10 | Channel A Output | KT88 |

## ELECTROLYTIC CAPACITORS

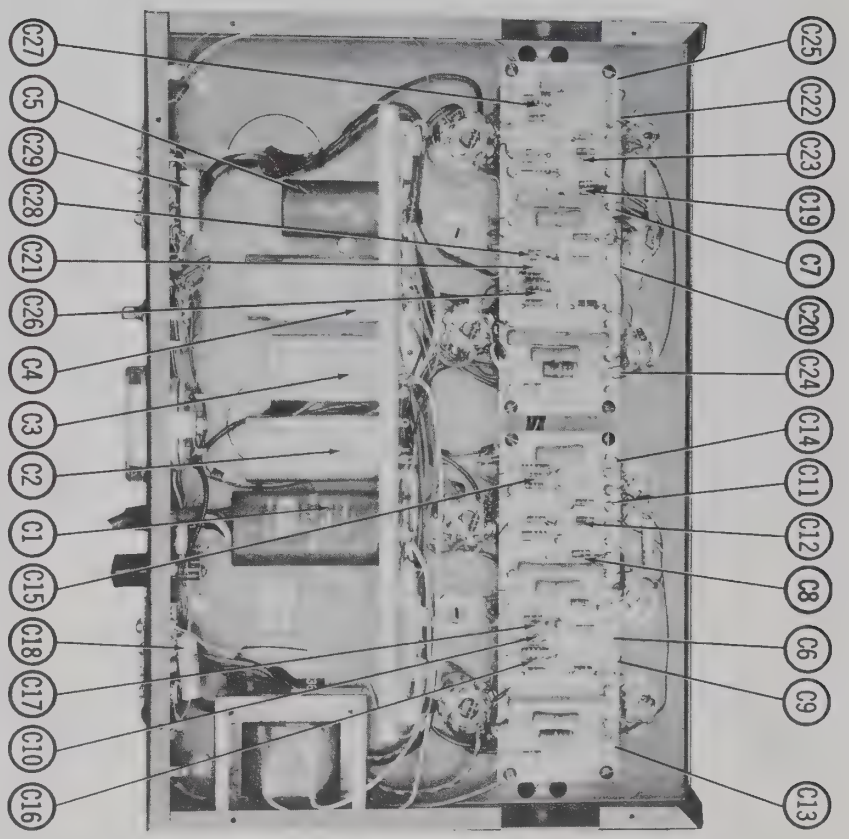
| ITEM No. | RATING | | REPLACEMENT DATA | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | CAP. | VOLT. | Harman-Kardon PART No. | AEROVOX PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | PYRAMID PART No. | SPRAGUE PART No. | NOTES |
| C1 | 200 | 250 | JE3273851 | AFHS1-37-30 | XA0318 | FP126 | TMS-75 | TVL-1547 | |
| C2 | 200 | 250 | JE3273682 | AFHS1-37-30 | XA0318 | FP126 | TMS-75 | TVL-1547 | |
| C3 | 40 | 525 | JE3273681 | | | FP176 | | TVL-1820 | |
| C4A | ■50 | 450 | JE3273783 | AFH2-59 | XB0455 | FP240 | TMD-56 | TVL-2767 | |
| B | ▲50 | 450 | | | | | | | |
| C5A | ▲20 | 150 | JE3273683 | AFH2-08 | B0090 | FP208 | TMD-6 | TVL-2415 | |
| B | ■20 | 150 | | | | | | | |
| C6 | 4 | 450 | JE3273784 | PRS1710 | BR445 | TC70 | TD4-450 | TVA-1702 | |
| C7 | 4 | 450 | JE3273784 | PRS1710 | BR445 | TC70 | TD4-450 | TVA-1702 | |

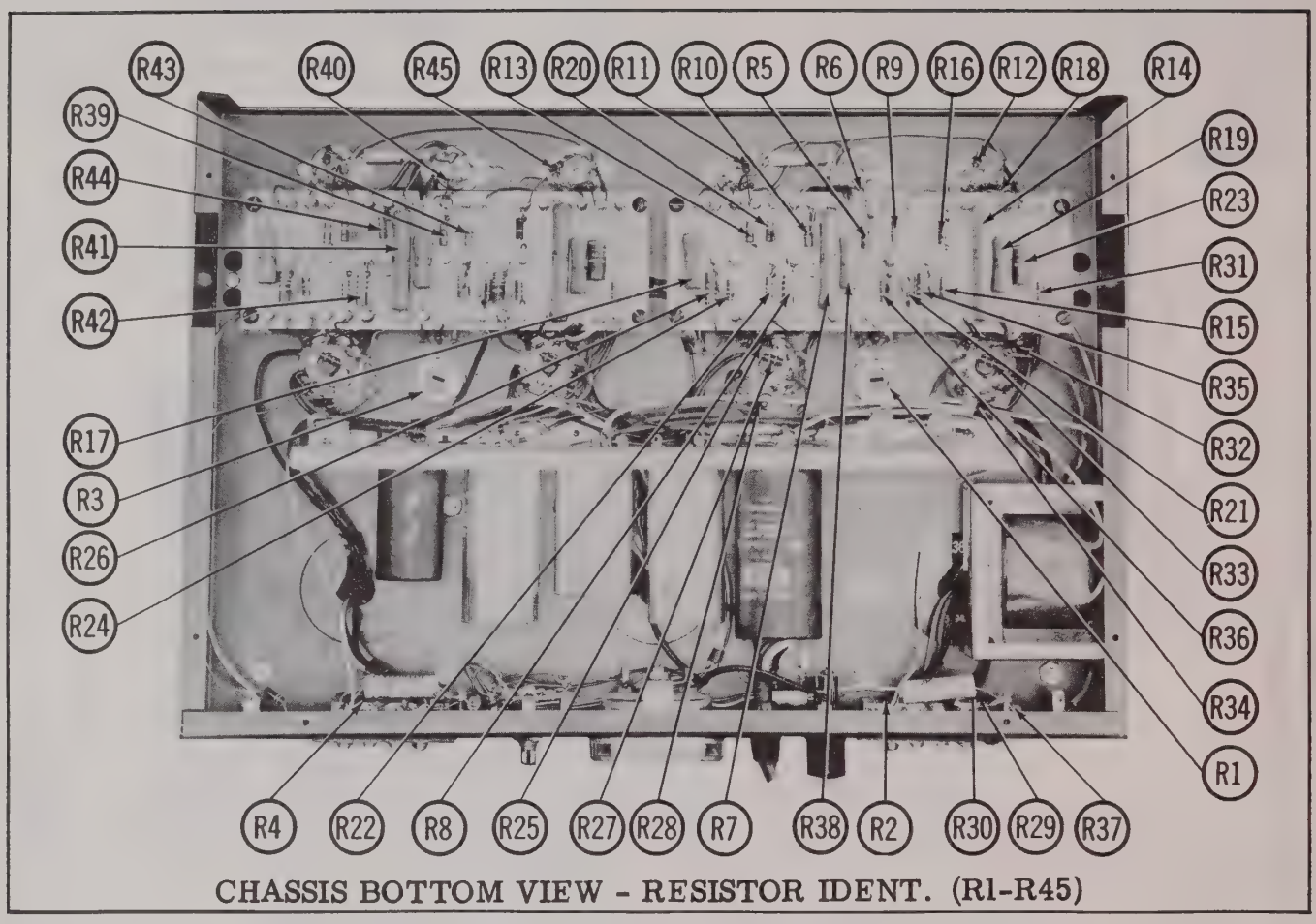
## FIXED CAPACITORS

**Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

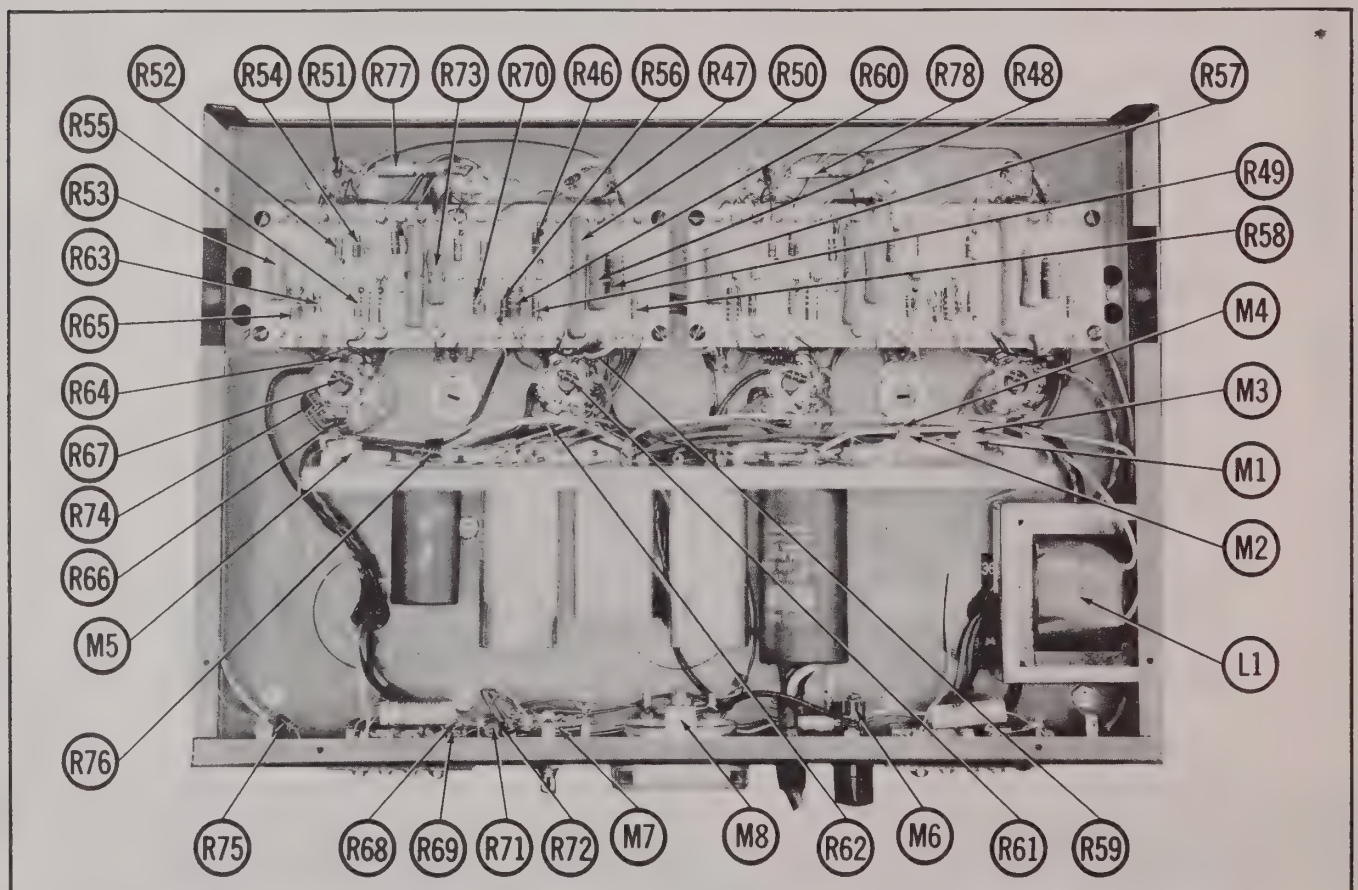
| ITEM No. | RATING | REMARKS | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
| C8 | 1000 | | BPD-001 | DD-102 | BYA10D1 | CCD-102 | B-210 | 5HK-D10 |
| C9 | .47 600V | | P688N-47 | | CUB6P47 | | GEM-6047 | 6TM-P5 |
| C10 | 20 N750 10% | | N750-DI 20 | DTN-20 | C10Q2U | CCTN-220 | CN7-420 | 10TCU-Q20 |
| C11 | .47 600V | | P688N-47 | | CUB6P47 | | GEM-6047 | 6TM-P5 |
| C12 | 20 N750 10% | | N750-DI 20 | DTN-20 | C10Q2U | CCTN-220 | CN7-420 | 10TCU-Q20 |
| C13 | .25 600V | | P688N-25 | | CUB6P25 | 6DP-5-254 | GEM-6025 | 6TM-P25 |
| C14 | .25 600V | | P688N-25 | | CUB6P25 | 6DP-5-254 | GEM-6025 | |
| C15 | 4.7 NPO 10% | | NPO-DI 4.7 | DTZ-4R7 | C10V47C | CCTO-4R7 | CNO-547 | 10TCC-V47 |
| C16 | 4.7 NPO 10% | | NPO-DI 4.7 | DTZ-4R7 | C10V47C | CCTO-4R7 | CNO-547 | 10TCC-V47 |
| C17 | 150 10% | | DI-150 | DD-151 | L10T15 | CCD-151 | GP315 | 10TS-T15 |
| C18 | .04 200V | | P288N-04 | DD-403 | CUB6S4 | 4DP-3-403 | GEM-414 | 4TM-S4 |
| C19 | 1000 | | BPD-001 | DD-102 | BYA10D1 | CCD-102 | B-210 | 5HK-D10 |
| C20 | .47 600V | | P688N-47 | | CUB6P47 | | GEM-6047 | 6TM-P5 |
| C21 | 20 N750 10% | | N750-DI 20 | DTN-20 | C10Q2U | CCTN-220 | CN7-420 | 10TCU-Q20 |
| C22 | .47 600V | | P688N-47 | | CUB6P47 | | GEM-6047 | 6TM-P5 |
| C23 | 20 N750 10% | | N750-DI 20 | DTN-20 | C10Q2U | CCTN-220 | CN7-420 | 10TCU-Q20 |
| C24 | .25 600V | | P688N-25 | | CUB6P25 | 6DP-5-254 | GEM-6025 | 6TM-P25 |
| C25 | .25 600V | | P688N-25 | | CUB6P25 | 6DP-5-254 | GEM-6025 | 6TM-P25 |
| C26 | 4.7 NPO 10% | | NPO-DI 4.7 | DTZ-4R7 | C10V47C | CCTO-4R7 | CNO-547 | 10TCC-V47 |

# CHASSIS—BOTTOM VIEW

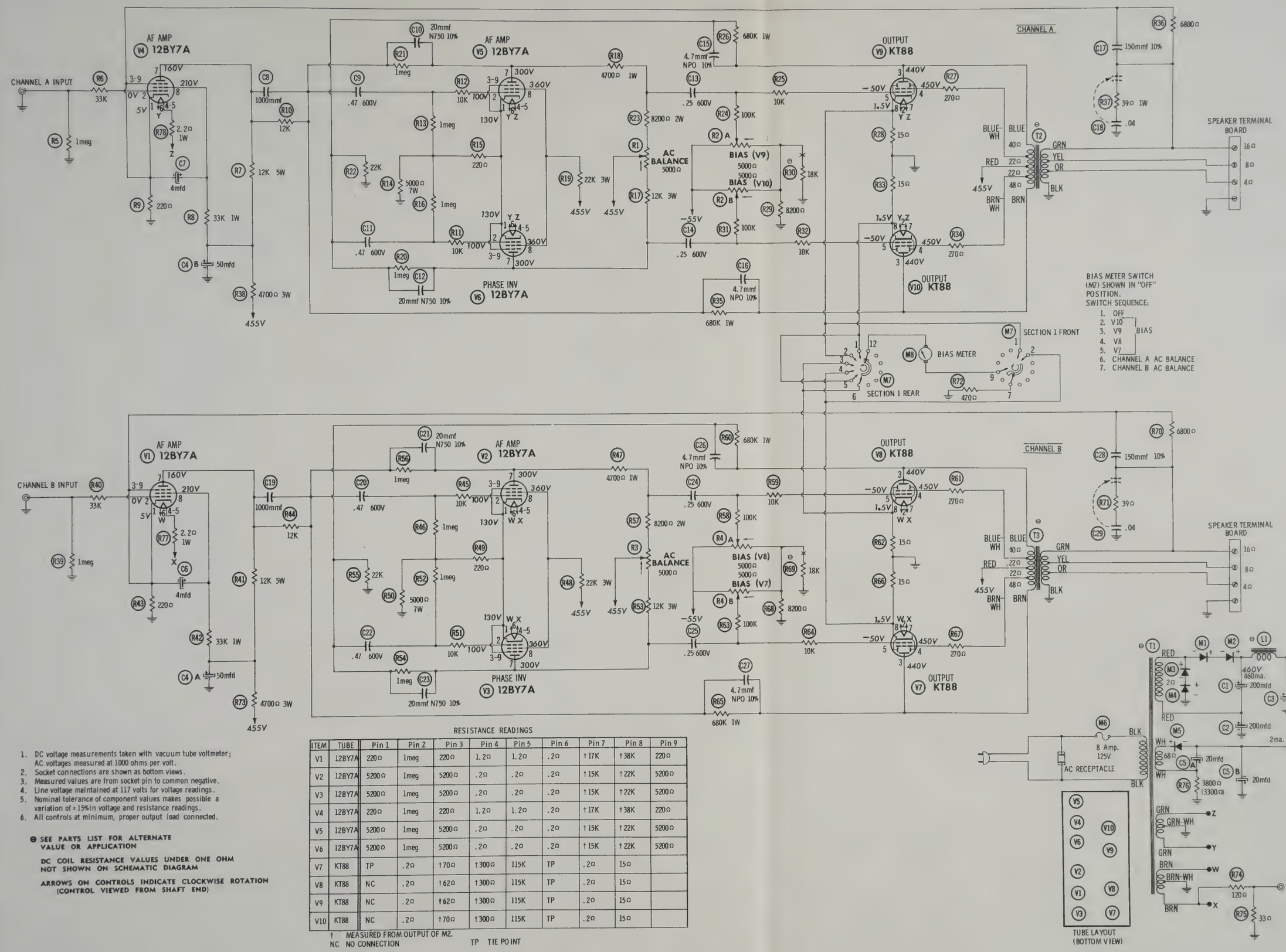





CHASSIS BOTTOM VIEW - RESISTOR IDENT. (R1-R45)




CHASSIS BOTTOM VIEW - RESISTOR, INDUCTOR & MISC. IDENT.




1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

**❸ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION**

**DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM**

**ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)**

RESISTANCE READINGS

| ITEM | TUBE | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 | Pin 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| V1 | 12BY7A | 220Ω | 1meg | 220Ω | 1.2Ω | 1.2Ω | .2Ω | †17K | †38K | 220Ω |
| V2 | 12BY7A | 5200Ω | 1meg | 5200Ω | .2Ω | .2Ω | .2Ω | †15K | †22K | 5200Ω |
| V3 | 12BY7A | 5200Ω | 1meg | 5200Ω | .2Ω | .2Ω | .2Ω | †15K | †22K | 5200Ω |
| V4 | 12BY7A | 220Ω | 1meg | 220Ω | 1.2Ω | 1.2Ω | .2Ω | †17K | †38K | 220Ω |
| V5 | 12BY7A | 5200Ω | 1meg | 5200Ω | .2Ω | .2Ω | .2Ω | †15K | †22K | 5200Ω |
| V6 | 12BY7A | 5200Ω | 1meg | 5200Ω | .2Ω | .2Ω | .2Ω | †15K | †22K | 5200Ω |
| V7 | KT88 | TP | .2Ω | †70Ω | †300Ω | 115K | TP | .2Ω | 15Ω | |
| V8 | KT88 | NC | .2Ω | †62Ω | †300Ω | 115K | TP | .2Ω | 15Ω | |
| V9 | KT88 | NC | .2Ω | †62Ω | †300Ω | 115K | TP | .2Ω | 15Ω | |
| V10 | KT88 | NC | .2Ω | †70Ω | †300Ω | 115K | TP | .2Ω | 15Ω | |

† MEASURED FROM OUTPUT OF M2.
NC NO CONNECTION
TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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**HARMAN-KARDON**
**MODEL Citation II**

# PARTS LIST AND DESCRIPTIONS (Continued)

## FIXED CAPACITORS (cont)

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
| C27 | 4.7 NPO 10% | | NPO-DI 4.7 | DTZ-4R7 | C10V47C | CCTO-4R7 | CNO-547 | 10TCC-V47 |
| C28 | 150 10% | | DI-150 | DD-151 | L10T15 | CCD-151 | GP315 | 10TS-T15 |
| C29 | .04 200V | | P288N-04 | DD-403 | CUB6S4 | 4DP-3-403 | GEM-414 | 4TM-S4 |

## CONTROLS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| | RESISTANCE | WATTS | Harman-Kardon PART No. | CENTRALAB PART No. | CLAROSTAT PART No. | CTS-IRC PART No. | MALLORY PART No. | |
| R1A | 5000Ω | ½ | RV3273908 | | | B11-114 | TA53L | AC Balance, Channel A |
| B | Shaft | | | | | TM4 | Not Req. | |
| R2A | 5000Ω | ½ | RV3273743 | | | | | Bias (V9) |
| B | 5000Ω | ½ | | | | | | Bias (V10) |
| R3A | 5000Ω | ½ | RV3273908 | | | B11-114 | | AC Balance, Channel B |
| B | Shaft | | | | | TM4 | | |
| R4A | 5000Ω | ½ | RV3273743 | | | | | Bias (V8) |
| B | 5000Ω | ½ | | | | | | Bias (V7) |

## RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R5 | 1meg | |
| R6 | 33K | |
| R7 | 12K 5W | |
| R8 | 33K 1W | |
| R9 | 220Ω | |
| R10 | 12K | |
| R11 | 10K | |
| R12 | 10K | |
| R13 | 1meg | |
| R14 | 5000Ω 7W | |
| R15 | 220Ω | |
| R16 | 1meg | |
| R17 | 12K 3W | |
| R18 | 4700Ω 1W | |
| R19 | 22K 3W | |
| R20 | 1meg | |
| R21 | 1meg | |
| R22 | 22K | |
| R23 | 8200Ω 2W | |
| R24 | 100K | |
| R25 | 10K | |
| R26 | 680K 1W | |
| R27 | 270Ω | |
| R28 | 15Ω | |
| R29 | 8200Ω | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R30 | 18K | Note 1 |
| R31 | 100K | |
| R32 | 10K | |
| R33 | 15Ω | |
| R34 | 270Ω | |
| R35 | 680K 1W | |
| R36 | 6800Ω | |
| R37 | 39Ω 1W | |
| R38 | 4700Ω 3W | |
| R39 | 1meg | |
| R40 | 33K | |
| R41 | 12K 5W | |
| R42 | 33K 1W | |
| R43 | 220Ω | |
| R44 | 12K | |
| R45 | 10K | |
| R46 | 1meg | |
| R47 | 4700Ω 1W | |
| R48 | 22K 3W | |
| R49 | 220Ω | |
| R50 | 5000Ω 7W | |
| R51 | 10K | |
| R52 | 1meg | |
| R53 | 12K 3W | |
| R54 | 1meg | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R55 | 22K | |
| R56 | 1meg | |
| R57 | 8200Ω 2W | |
| R58 | 100K | |
| R59 | 10K | |
| R60 | 680K 1W | |
| R61 | 270Ω | |
| R62 | 15Ω | |
| R63 | 100K | |
| R64 | 10K | |
| R65 | 680K 1W | |
| R66 | 15Ω | |
| R67 | 270Ω | |
| R68 | 8200Ω | |
| R69 | 18K | Note 1 |
| R70 | 6800Ω | |
| R71 | 39Ω | |
| R72 | 470Ω | |
| R73 | 4700Ω 3W | |
| R74 | 120Ω | |
| R75 | 33Ω | |
| R76 | 3800Ω | (3300Ω) * |
| R77 | 2.2Ω 1W | |
| R78 | 2.2Ω 1W | |

Note 1. Not used in some versions.
* Alternate Value.

## FILTER CHOKE

| ITEM No. | RATINGS | | | REPLACEMENT DATA | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | CURRENT (Measured) | DC RES. | INDUCTANCE (0 CURRENT 1000 ∿) | Harman-Kardon PART No. | Halldorson PART No. | Merit PART No. | Ram PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. |
| L1 | .460A | 11Ω | .7HY | FC3273672A ① | | | | C-2328 ② | | |

① Alternate Part #FC3273672.
② Drill New Mounting Holes.

## TRANSFORMER (POWER)

| ITEM No. | RATING | | | REPLACEMENT DATA | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. 1 | SEC. 2 | Harman-Kardon PART No. | Halldorson PART No. | Merit PART No. | Ram PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. |
| T1 | 117V@ 2.8A | 160V@ 1.7A (AC) | 6.3VCT @ 3.8A | FT3273670A | | | | | | |
| | SEC. 3 | SEC. 4 | SEC. 5 | | | | | | | |
| | 6.3V@ 3.8A | 70V@ .002A | | | | | | | | * |

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE | | REPLACEMENT DATA | | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. | Harman-Kardon PART No. | Halldorson PART No. | Merit PART No. | Ram PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. | |
| T2 | 3200Ω CT Tap@ 400Ω CT | 16Ω Tap @ 8Ω, 4Ω | FT3273671A ① | | | | | | | |
| T3 | 3200Ω CT Tap@ 400Ω CT | 16Ω Tap @ 8Ω, 4Ω | FT3273671A ① | | | | | | | |

① Alternate Part #FT3273671.

## RECTIFIERS

| ITEM No. | RATING | REPLACEMENT DATA | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | CURRENT (Measured) | Harman-Kardon PART No. | INTERNATIONAL PART No. | ITT PART No. | SARKES TARZIAN PART No. | SYLVANIA PART No. | | |
| M1 | .460A | ZCOM3679 * | SD-94A * | RE504 * | 40K * | SR-500 * | | * Silicon Type |
| M2 | .460A | ZCOM3679 * | SD-94A * | RE504 * | 40K * | SR-500 * | | ♦ Selenium Type |
| M3 | .460A | ZCOM3679 * | SD-94A * | RE504 * | 40K * | SR-500 * | | |
| M4 | .460A | ZCOM3679 * | SD-94A * | RE504 * | 40K * | SR500 * | | |
| M5 | .002A | Z3273690 ♦ | D-5410 ♦ | 1159 ♦ | 10 ♦ | | | |

## FUSES

| ITEM No. | TYPE | RATING | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Harman-Kardon PART No. | | LITTELFUSE PART No. | | BUSS PART No. | |
| | | | FUSE | HOLDER | FUSE | HOLDER | FUSE | HOLDER |
| M6 | 3AG | 8A 125V | ZCOM3715 | | 312008 (3AG 8A 125V) | 342001 | GLH 8 | HKP |

## MISCELLANEOUS

| ITEM No. | PART NAME | Harman-Kardon PART No. | NOTES |
|---|---|---|---|
| M7 | Switch | ER3273909 | |
| M8 | Meter | M3273850 | Meter Includes Mounting Bracket and Nuts. |

## WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

## ADJUSTMENTS

BIAS ADJUSTMENT

1. Set Meter switch to V10 position. Make sure no signal is applied.
2. Adjust V10 Bias control until meter pointer coincides with Bias marker on meter. Repeat adjustments for V9, V8 and V7.
3. Repeat this procedure until no meter movement is noted as the switch is rotated from one position to another.

A.C. BALANCE ADJUSTMENT

1. Connect a 16 ohm 20 watt resistor across the 16 ohm terminals of Channel A speaker terminal strip. Connect a phono patch cord from the Test Signal jack to the Channel A input jack.
2. Rotate the Meter switch to the Channel A A.C. Balance position.
3. Adjust the Channel A Balance control until the meter pointer coincides with the Balance marker on the meter.
4. Move the patch cord from Channel A input to Channel B input and repeat above adjustments for Channel B.

PHOTOFACT® Folder

# HARMAN-KARDON MODEL CITATION III

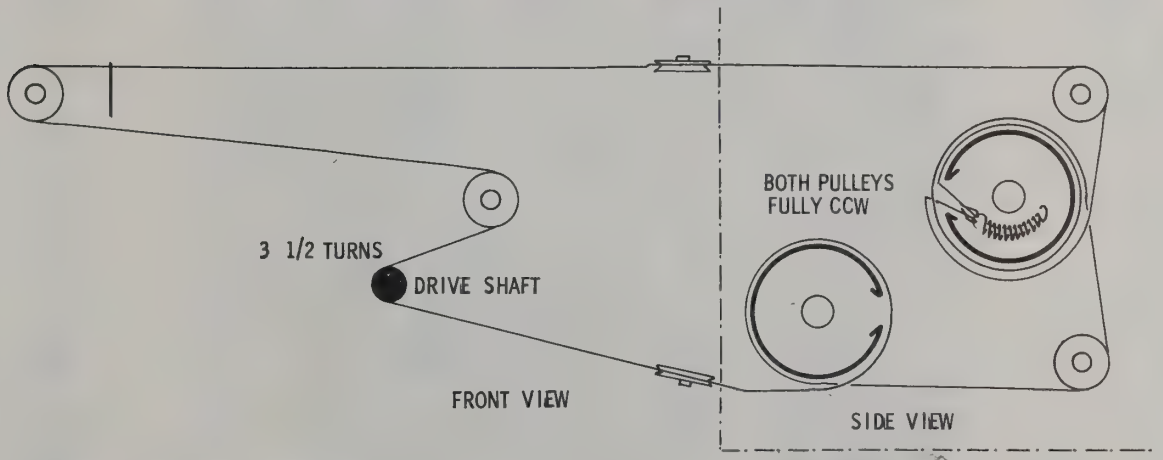
HARMAN-KARDON
MODEL CITATION III



HARMAN-KARDON
MODEL CITATION III

| | |
|---|---|
| TRADE NAME | Harman-Kardon Model Citation III |
| MANUFACTURER | Harman-Kardon, Inc., Ames Court, Plainview, L. I., N. Y. |
| TYPE SET | AC Operated 10 Tube FM Tuner |
| POWER SUPPLY | 105 — 125 Volts AC, 60 Cycles RATING 63 Watts, .6 Amp. @117 Volts AC |
| TUNING RANGE—FREQ. MOD. | 88 ~ 108MC |

## DIAL CORD STRINGING




**HOWARD W. SAMS & CO., INC.** Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1962 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

LJ256

# PARTS LIST AND DESCRIPTIONS

## TUBES

| ITEM No. | USE | TYPE | ITEM No. | USE | TYPE |
|---|---|---|---|---|---|
| V1 | Channel B AF Amp. | 12BY7A | V6 | Channel A Phase Inv. | 12BY7A |
| V2 | Channel B AF Amp. | 12BY7A | V7 | Channel B Output | KT88 |
| V3 | Channel B Phase Inv. | 12BY7A | V8 | Channel B Output | KT88 |
| V4 | Channel A AF Amp. | 12BY7A | V9 | Channel A Output | KT88 |
| V5 | Channel A AF Amp. | 12BY7A | V10 | Channel A Output | KT88 |

## ELECTROLYTIC CAPACITORS

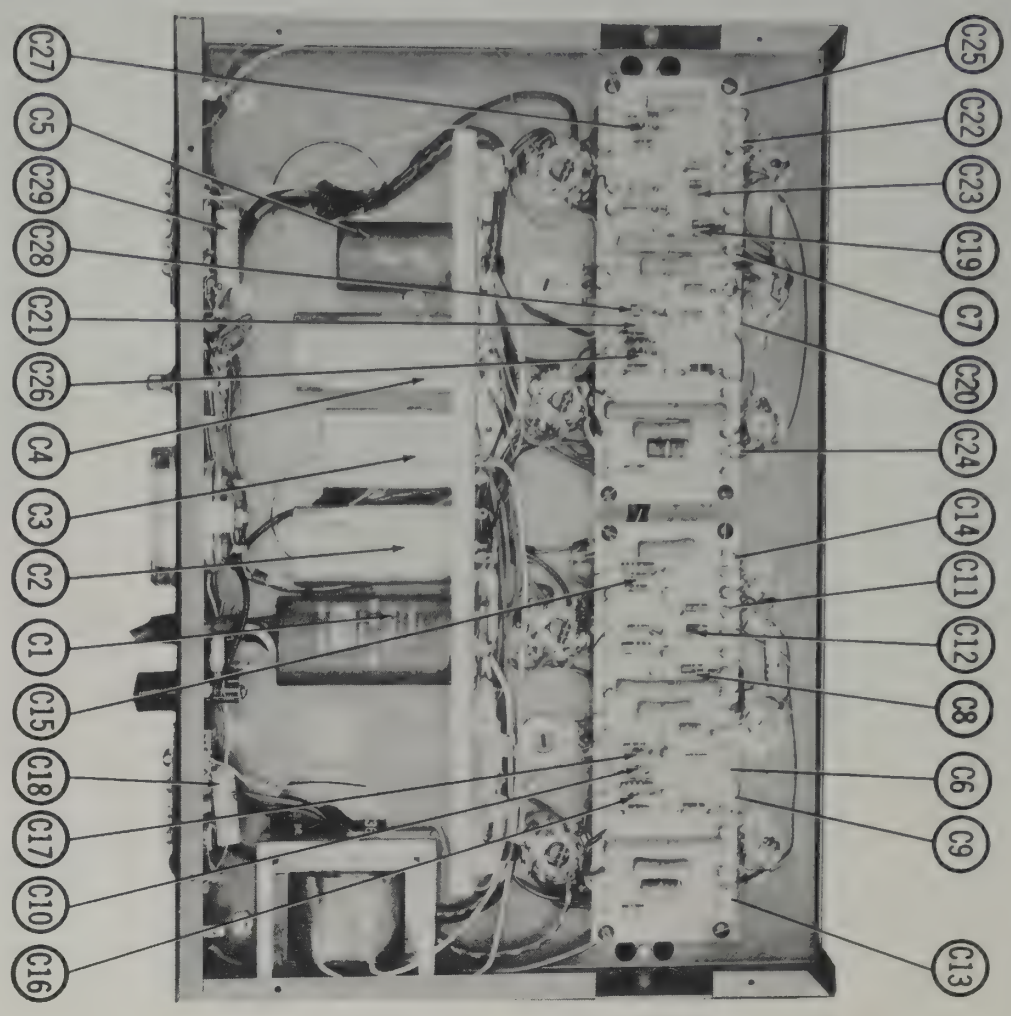
| ITEM No. | RATING | | REPLACEMENT DATA | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | CAP. | VOLT. | Harman-Kardon PART No. | AEROVOX PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | PYRAMID PART No. | SPRAGUE PART No. | NOTES |
| C1 | 200 | 250 | JE3273851 | AFHS1-37-30 | XA0318 | FP126 | TMS-75 | TVL-1547 | |
| C2 | 200 | 250 | JE3273682 | AFHS1-37-30 | XA0318 | FP126 | TMS-75 | TVL-1547 | |
| C3 | 40 | 525 | JE3273681 | | | FP176 | | TVL-1820 | |
| C4A | ■50 | 450 | JE3273783 | AFH2-59 | XB0455 | FP240 | TMD-56 | TVL-2767 | |
| B | ▲50 | 450 | | | | | | | |
| C5A | ▲20 | 150 | JE3273683 | AFH2-08 | B0090 | FP208 | TMD-6 | TVL-2415 | |
| B | ■20 | 150 | | | | | | | |
| C6 | 4 | 450 | JE3273784 | PRS1710 | BR445 | TC70 | TD4-450 | TVA-1702 | |
| C7 | 4 | 450 | JE3273784 | PRS1710 | BR445 | TC70 | TD4-450 | TVA-1702 | |

## FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
| C8 | 1000 | | BPD-001 | DD-102 | BYA10D1 | CCD-102 | B-210 | 5HK-D10 |
| C9 | .47 600V | | P688N-47 | | CUB6P47 | | GEM-6047 | 6TM-P5 |
| C10 | 20 N750 10% | | N750-DI 20 | DTN-20 | C10Q2U | CCTN-220 | CN7-420 | 10TCU-Q20 |
| C11 | .47 600V | | P688N-47 | | CUB6P47 | | GEM-6047 | 6TM-P5 |
| C12 | 20 N750 10% | | N750-DI 20 | DTN-20 | C10Q2U | CCTN-220 | CN7-420 | 10TCU-Q20 |
| C13 | .25 600V | | P688N-25 | | CUB6P25 | 6DP-5-254 | GEM-6025 | 6TM-P25 |
| C14 | .25 600V | | P688N-25 | | CUB6P25 | 6DP-5-254 | GEM-6025 | |
| C15 | 4.7 NPO 10% | | NPO-DI 4.7 | DTZ-4R7 | C10V47C | CCTO-4R7 | CNO-547 | 10TCC-V47 |
| C16 | 4.7 NPO 10% | | NPO-DI 4.7 | DTZ-4R7 | C10V47C | CCTO-4R7 | CNO-547 | 10TCC-V47 |
| C17 | 150 10% | | DI-150 | DD-151 | L10T15 | CCD-151 | GP315 | 10TS-T15 |
| C18 | .04 200V | | P288N-04 | DD-403 | CUB6S4 | 4DP-3-403 | GEM-414 | 4TM-S4 |
| C19 | 1000 | | BPD-001 | DD-102 | BYA10D1 | CCD-102 | B-210 | 5HK-D10 |
| C20 | .47 600V | | P688N-47 | | CUB6P47 | | GEM-6047 | 6TM-P5 |
| C21 | 20 N750 10% | | N750-DI 20 | DTN-20 | C10Q2U | CCTN-220 | CN7-420 | 10TCU-Q20 |
| C22 | .47 600V | | P688N-47 | | CUB6P47 | | GEM-6047 | 6TM-P5 |
| C23 | 20 N750 10% | | N750-DI 20 | DTN-20 | C10Q2U | CCTN-220 | CN7-420 | 10TCU-Q20 |
| C24 | .25 600V | | P688N-25 | | CUB6P25 | 6DP-5-254 | GEM-6025 | 6TM-P25 |
| C25 | .25 600V | | P688N-25 | | CUB6P25 | 6DP-5-254 | GEM-6025 | 6TM-P25 |
| C26 | 4.7 NPO 10% | | NPO-DI 4.7 | DTZ-4R7 | C10V47C | CCTO-4R7 | CNO-547 | 10TCC-V47 |

# CHASSIS—BOTTOM VIEW




# PARTS LIST AND DESCRIPTIONS (Continued)

## FIXED CAPACITORS (cont)

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
| C27 | 4.7 NPO 10% | | NPO-DI 4.7 | DTZ-4R7 | C10V47C | CCTO-4R7 | CNO-547 | 10TCC-V47 |
| C28 | 150 10% | | DI-150 | DD-151 | L10T15 | CCD-151 | GP315 | 10TS-T15 |
| C29 | .04 200V | | P288N-04 | DD-403 | CUB6S4 | 4DP-3-403 | GEM-414 | 4TM-S4 |

## CONTROLS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| | RESISTANCE | WATTS | Harman-Kardon PART No. | CENTRALAB PART No. | CLAROSTAT PART No. | CTS-IRC PART No. | MALLORY PART No. | |
| R1A | 5000Ω | ½ | RV3273908 | | | B11-114 TM4 | TA53L Not Req. | AC Balance, Channel A |
| B | Shaft | | | | | | | |
| R2A | 5000Ω | ½ | RV3273743 | | | | | Bias (V9) |
| B | 5000Ω | ½ | | | | | | Bias (V10) |
| R3A | 5000Ω | ½ | RV3273908 | | | B11-114 TM4 | | AC Balance, Channel B |
| B | Shaft | | | | | | | |
| R4A | 5000Ω | ½ | RV3273743 | | | | | Bias (V8) |
| B | 5000Ω | ½ | | | | | | Bias (V7) |

## RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R5 | 1meg | |
| R6 | 33K | |
| R7 | 12K 5W | |
| R8 | 33K 1W | |
| R9 | 220Ω | |
| R10 | 12K | |
| R11 | 10K | |
| R12 | 10K | |
| R13 | 1meg | |
| R14 | 5000Ω 7W | |
| R15 | 220Ω | |
| R16 | 1meg | |
| R17 | 12K 3W | |
| R18 | 4700Ω 1W | |
| R19 | 22K 3W | |
| R20 | 1meg | |
| R21 | 1meg | |
| R22 | 22K | |
| R23 | 8200Ω 2W | |
| R24 | 100K | |
| R25 | 10K | |
| R26 | 680K 1W | |
| R27 | 270Ω | |
| R28 | 15Ω | |
| R29 | 8200Ω | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R30 | 18K | Note 1 |
| R31 | 100K | |
| R32 | 10K | |
| R33 | 15Ω | |
| R34 | 270Ω | |
| R35 | 680K 1W | |
| R36 | 6800Ω | |
| R37 | 39Ω 1W | |
| R38 | 4700Ω 3W | |
| R39 | 1meg | |
| R40 | 33K | |
| R41 | 12K 5W | |
| R42 | 33K 1W | |
| R43 | 220Ω | |
| R44 | 12K | |
| R45 | 10K | |
| R46 | 1meg | |
| R47 | 4700Ω 1W | |
| R48 | 22K 3W | |
| R49 | 220Ω | |
| R50 | 5000Ω 7W | |
| R51 | 10K | |
| R52 | 1meg | |
| R53 | 12K 3W | |
| R54 | 1meg | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R55 | 22K | |
| R56 | 1meg | |
| R57 | 8200Ω 2W | |
| R58 | 100K | |
| R59 | 10K | |
| R60 | 680K 1W | |
| R61 | 270Ω | |
| R62 | 15Ω | |
| R63 | 100K | |
| R64 | 10K | |
| R65 | 680K 1W | |
| R66 | 15Ω | |
| R67 | 270Ω | |
| R68 | 8200Ω | |
| R69 | 18K | Note 1 |
| R70 | 6800Ω | |
| R71 | 39Ω | |
| R72 | 470Ω | |
| R73 | 4700Ω 3W | |
| R74 | 120Ω | |
| R75 | 33Ω | |
| R76 | 3800Ω | (3300Ω) * |
| R77 | 2.2Ω 1W | |
| R78 | 2.2Ω 1W | |

Note 1. Not used in some versions.
* Alternate Value.

## FILTER CHOKE

| ITEM No. | RATINGS | | | REPLACEMENT DATA | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | CURRENT (Measured) | DC RES. | INDUCTANCE (0 CURRENT 1000 ~) | Harman-Kardon PART No. | Halldorson PART No. | Merit PART No. | Ram PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. |
| L1 | .460A | 11Ω | .7HY | FC3273672A ① | | | | C-2328 ② | | |

① Alternate Part #FC3273672.
② Drill New Mounting Holes.

## TRANSFORMER (POWER)

| ITEM No. | RATING | | | REPLACEMENT DATA | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. 1 | SEC. 2 | Harman-Kardon PART No. | Halldorson PART No. | Merit PART No. | Ram PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. |
| T1 | 117V @ 2.8A | 160V @ 1.7A (AC) | 6.3VCT @ 3.8A | FT3273670A | | | | | | |
| | SEC. 3 | SEC. 4 | SEC. 5 | | | | | | | |
| | 6.3V @ 3.8A | 70V @ .002A | | | | | | | | |

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE | | REPLACEMENT DATA | | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. | Harman-Kardon PART No. | Halldorson PART No. | Merit PART No. | Ram PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. | |
| T2 | 3200Ω CT Tap @ 400Ω CT | 16Ω Tap @ 8Ω, 4Ω | FT3273671A ① | | | | | | | |
| T3 | 3200Ω CT Tap @ 400Ω CT | 16Ω Tap @ 8Ω, 4Ω | FT3273671A ① | | | | | | | |

① Alternate Part #FT3273671.

## RECTIFIERS

| ITEM No. | RATING | REPLACEMENT DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|
| | CURRENT (Measured) | Harman-Kardon PART No. | INTERNATIONAL PART No. | ITT PART No. | SARKES TARZIAN PART No. | SYLVANIA PART No. | |
| M1 | .460A | ZCOM3679 * | SD-94A * | RE504 * | 40K * | SR-500 * | * Silicon Type |
| M2 | .460A | ZCOM3679 * | SD-94A * | RE504 * | 40K * | SR-500 * | ♦ Selenium Type |
| M3 | .460A | ZCOM3679 * | SD-94A * | RE504 * | 40K * | SR-500 * | |
| M4 | .460A | ZCOM3679 * | SD-94A * | RE504 * | 40K * | SR500 * | |
| M5 | .002A | Z3273690 ♦ | D-5410 ♦ | 1159 ♦ | 10 ♦ | | |

## FUSES

| ITEM No. | TYPE | RATING | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Harman-Kardon PART No. | | LITTELFUSE PART No. | | BUSS PART No. | |
| | | | FUSE | HOLDER | FUSE | HOLDER | FUSE | HOLDER |
| M6 | 3AG | 8A 125V | ZCOM3715 | | 312008 (3AG 8A 125V) | 342001 | GLH 8 | HKP |

## MISCELLANEOUS

| ITEM No. | PART NAME | Harman-Kardon PART No. | NOTES |
|---|---|---|---|
| M7 | Switch | ER3273909 | Meter |
| M8 | Meter | M3273850 | Includes Mounting Bracket and Nuts. |

## WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

# ADJUSTMENTS

BIAS ADJUSTMENT

1. Set Meter switch to V10 position. Make sure no signal is applied.
2. Adjust V10 Bias control until meter pointer coincides with Bias marker on meter. Repeat adjustments for V9, V8 and V7.
3. Repeat this procedure until no meter movement is noted as the switch is rotated from one position to another.

A.C. BALANCE ADJUSTMENT

1. Connect a 16 ohm 20 watt resistor across the 16 ohm terminals of Channel A speaker terminal strip. Connect a phono patch cord from the Test Signal jack to the Channel A input jack.
2. Rotate the Meter switch to the Channel A A.C. Balance position.
3. Adjust the Channel A Balance control until the meter pointer coincides with the Balance marker on the meter.
4. Move the patch cord from Channel A input to Channel B input and repeat above adjustments for Channel B.

PHOTOFACT® Folder

# HARMAN-KARDON MODEL CITATION III

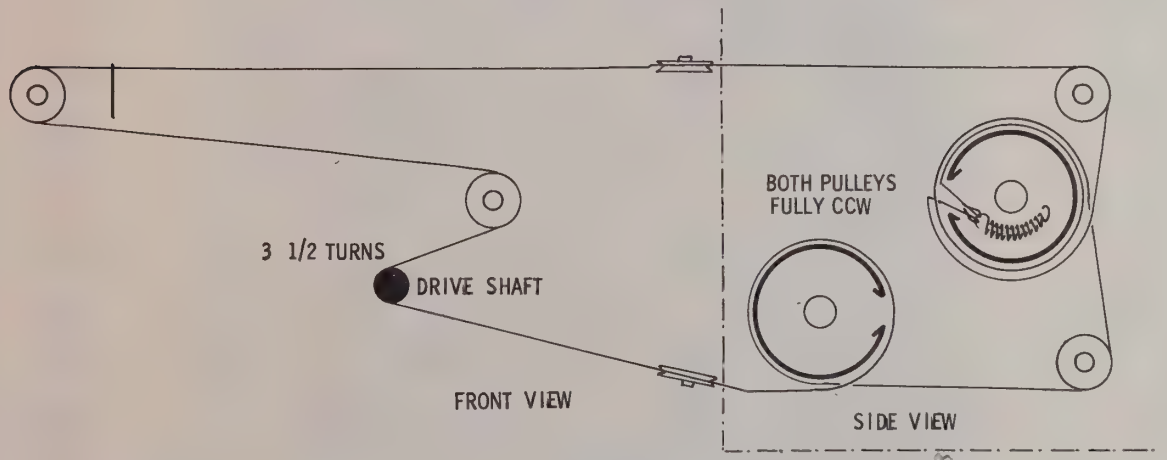
HARMAN-KARDON
MODEL CITATION III



HARMAN-KARDON
MODEL CITATION III

| | |
|---|---|
| TRADE NAME | Harman-Kardon Model Citation III |
| MANUFACTURER | Harman-Kardon, Inc., Ames Court, Plainview, L. I., N. Y. |
| TYPE SET | AC Operated 10 Tube FM Tuner |
| POWER SUPPLY | 105 — 125 Volts AC, 60 Cycles RATING 63 Watts, .6 Amp. @117 Volts AC |
| TUNING RANGE—FREQ. MOD. | 88 — 108MC |

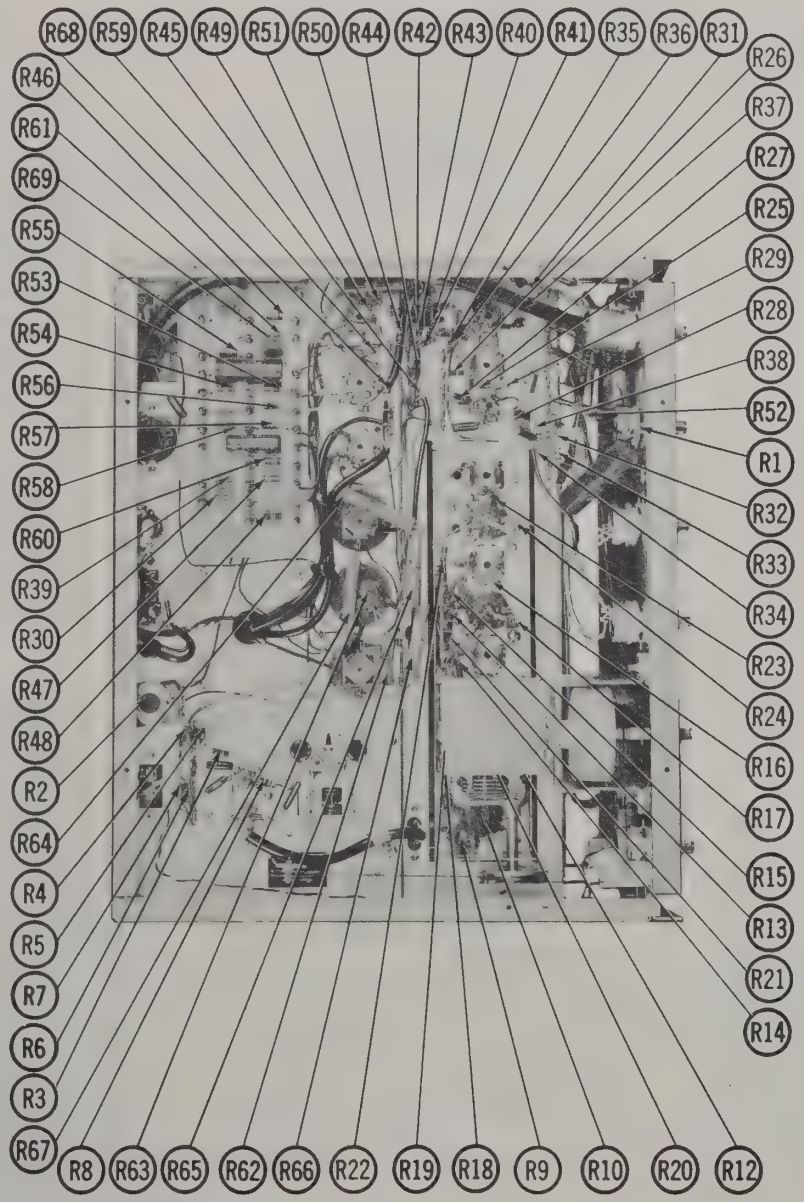
## DIAL CORD STRINGING



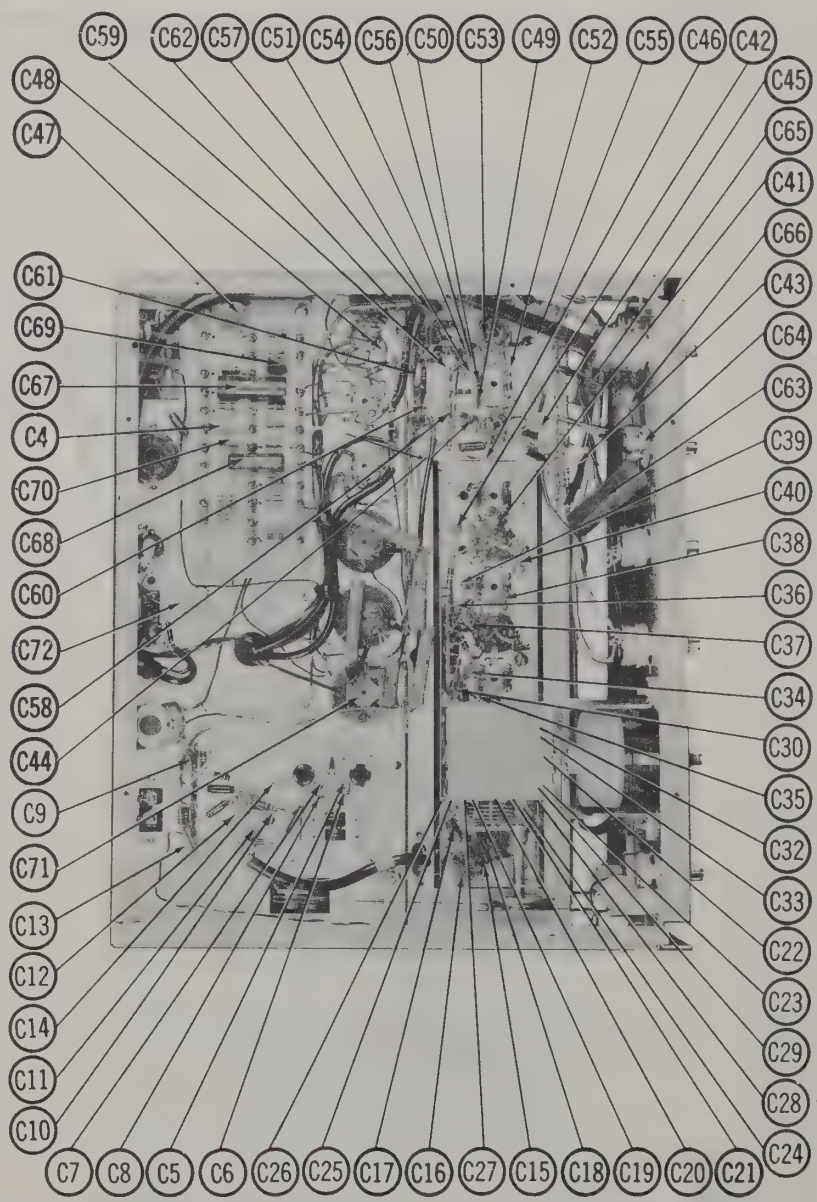

**HOWARD W. SAMS & CO., INC.** Indianapolis 6, Indiana

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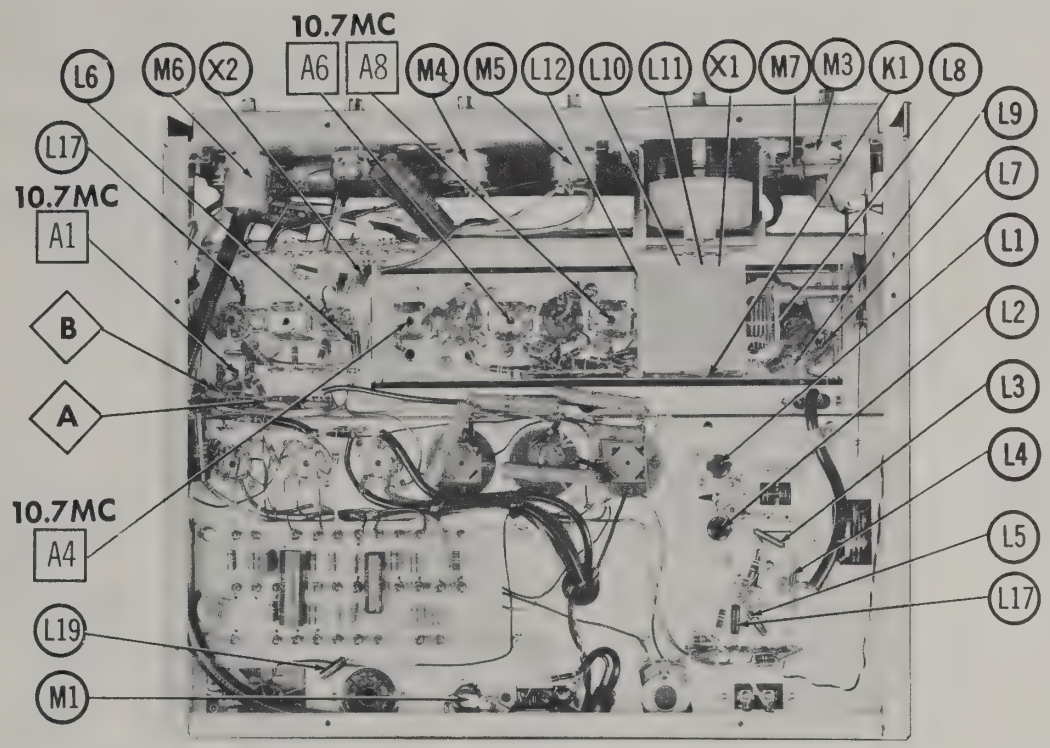
LJ256



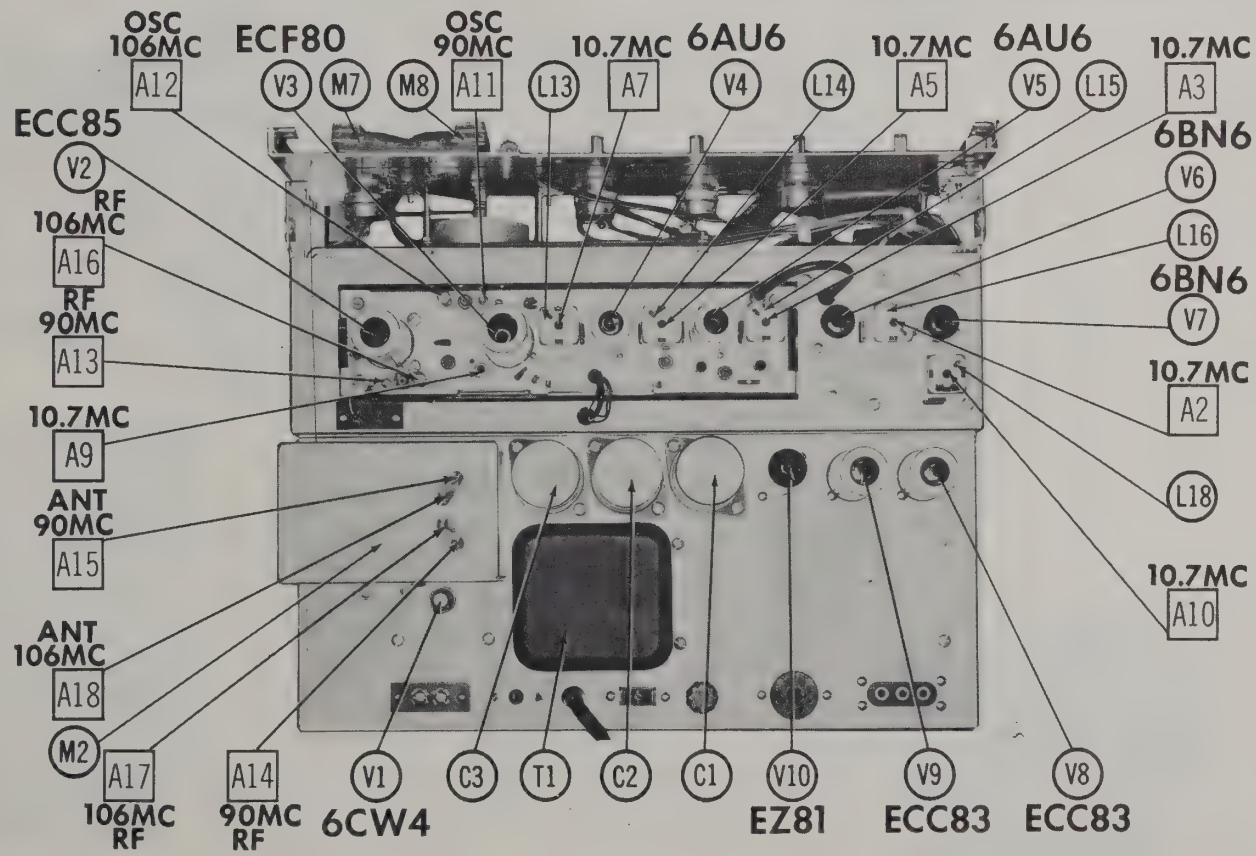

CHASSIS BOTTOM VIEW — RESISTOR IDENT.



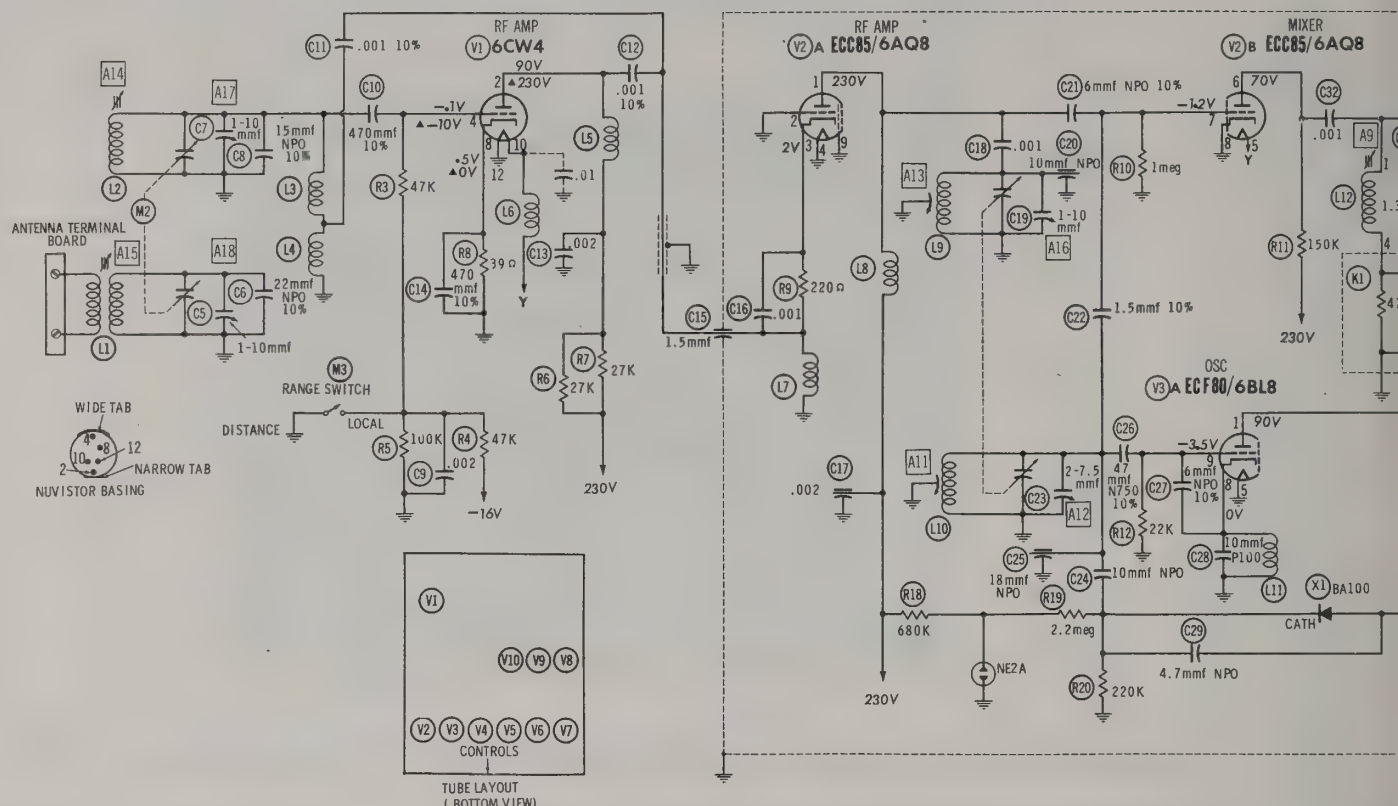

CHASSIS BOTTOM VIEW — CAPACITOR IDENT.

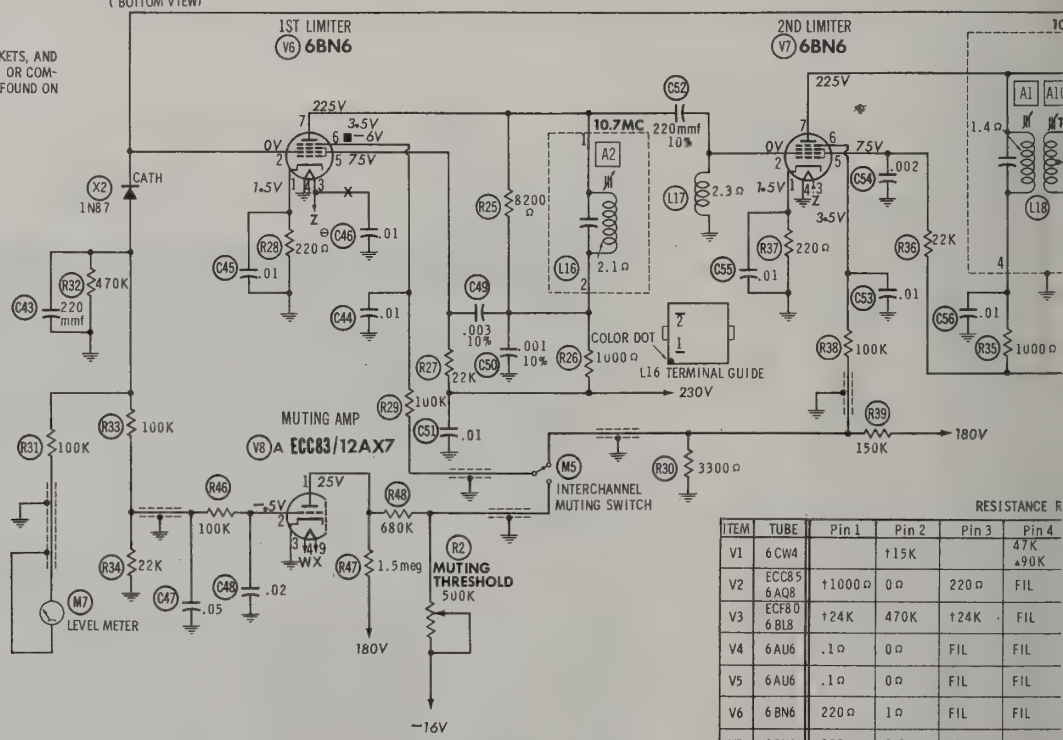



CHASSIS BOTTOM VIEW — ALIGNMENT, INDUCTOR & MISC. IDENT.




CHASSIS — TOP VIEW




NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE R

| ITEM | TUBE | Pin 1 | Pin 2 | Pin 3 | Pin 4 |
|---|---|---|---|---|---|
| V1 | 6CW4 | | †15K | | 47K ▲90K |
| V2 | ECC85 6AQ8 | †1000Ω | 0Ω | 220Ω | FIL |
| V3 | ECF80 6BL8 | †24K | 470K | †24K | FIL |
| V4 | 6AU6 | .1Ω | 0Ω | FIL | FIL |
| V5 | 6AU6 | .1Ω | 0Ω | FIL | FIL |
| V6 | 6BN6 | 220Ω | 1Ω | FIL | FIL |
| V7 | 6BN6 | 220Ω | 2.3Ω | FIL | FIL |
| V8 | ECC83 12AX7 | †700K | 120K | 0Ω | FIL |
| V9 | ECC83 12AX7 | †113K | 1meg | 1200Ω | FIL |
| V10 | EZ81 6CA4 | 325Ω | NC | ¶ | FIL |

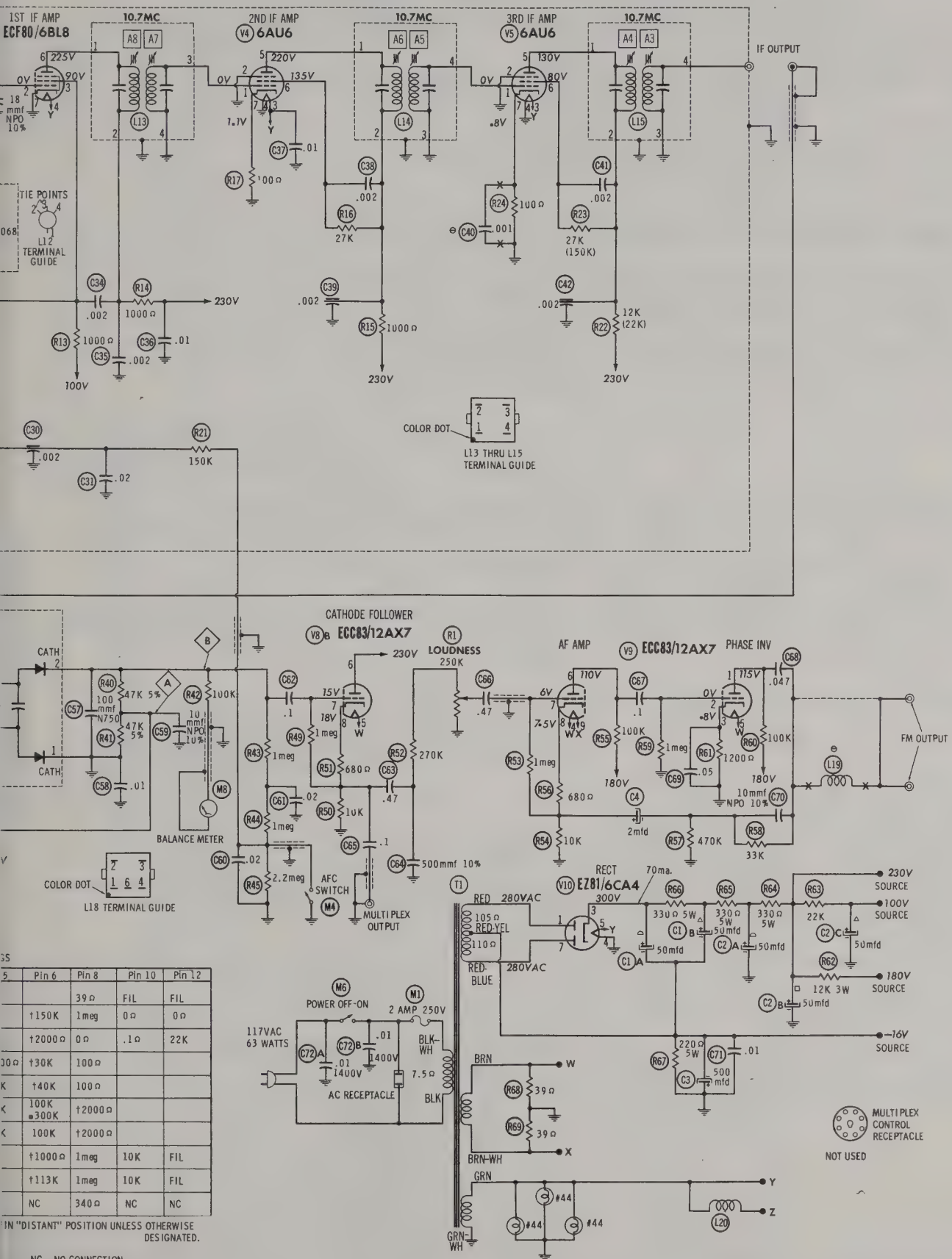
ALL MEASUREMENTS MADE WITH MUTING OFF AND RANGE S
▲ MEASURED IN "LOCAL" POSITION.
■ MEASURED WITH MUTING ON.
† MEASURED FROM PIN 3 OF V10.
¶ THIS READING WILL VARY DEPENDING UPON THE C

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

**DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM**

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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| | Pin 6 | Pin 8 | Pin 10 | Pin 12 |
|---|---|---|---|---|
| | | 39Ω | FIL | FIL |
| | †150K | 1meg | 0Ω | 0Ω |
| | †2000Ω | 0Ω | .1Ω | 22K |
| 0Ω | †30K | 100Ω | | |
| K | †40K | 100Ω | | |
| K | 100K •300K | †2000Ω | | |
| K | 100K | †2000Ω | | |
| | †1000Ω | 1meg | 10K | FIL |
| | †113K | 1meg | 10K | FIL |
| | NC | 340Ω | NC | NC |

IN "DISTANT" POSITION UNLESS OTHERWISE DESIGNATED.

NC NO CONNECTION
ON OF THE ELECTROLYTIC IN THE CIRCUIT.

**HARMAN-KARDON
MODEL CITATION III**

# ALIGNMENT INSTRUCTIONS

**ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT**

Use only enough generator output to provide a usable indication.
Suggested Alignment Tools:

A1, A2, A9, A10.....GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

A3 thru A8.....GENERAL CEMENT #5097, 8727
WALSCO #2515

A11, A13, A14, A15.....GENERAL CEMENT #8721, 8722
WALSCO #2519

A12, A16, A17, A18..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

AFC Off.

| | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|
| 1. | High side to an ungrounded tube shield over Mixer. Low side to chassis. | 10.7MC (Unmod.) | Point of non-interference. | DC probe thru 1meg to point Ⓐ. Common to chassis. | A1, A2, A3, A4, A5, A6, A7, A8, A9 | Adjust for maximum deflection. |
| 2. | " | " | " | DC probe to point Ⓑ. Common to chassis. | A10 | Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. |

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE — SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

| | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|
| 1. | High side to ungrounded tube shield over Mixer. Low side to chassis. | 10.7MC (450KC Swp) | Point of non-interference. | Vert. amp. thru 47K to point Ⓐ. Low side to chassis. | A1, A2, A3, A4, A5, A6, A7, A8, A9 | Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. |
| 2. | " | " | " | Vert. amp. to point Ⓑ. Low side to chassis. | A10 | Adjust to place marker at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A1 for maximum amplitude and straightness of crossover lines. |

FM RF ALIGNMENT — SELECTOR IN FM POSITION

| | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|
| 3. | Across FM antenna terminals with 120Ω in each lead. | 90MC (Unmod.) | 90MC | DC probe thru 1meg to point Ⓐ. Common to chassis. | A11 | Adjust for maximum deflection. |
| 4. | " | 106MC | 106MC | " | A12 | " |
| 5. | " | 90MC | 90MC | " | A13, A14, A15 | " |
| 6. | " | 106MC | 106MC | " | A16, A17, A18 | " |

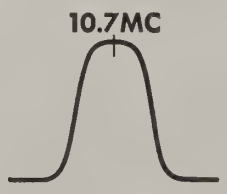



FIG. 1

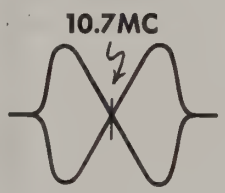



FIG. 2

# PARTS LIST AND DESCRIPTIONS

## WIRING DATA

| | |
|---|---|
| General-use Unshielded Hook-up Wire | Use BELDEN No. 8530 (Solid) Available in 12 Colors<br>8524 (Stranded) Available in 12 Colors |
| Power Cord | Use BELDEN No. 17106 (Plastic) or 17126 (Rubber) - 6 Ft.<br>17109 (Plastic) or 17129 (Rubber) - 9 Ft. |
| Power Cord (Interlock Type) | Use BELDEN No. 8874 (Rubber) or 8895 (Plastic) |
| Low-Loss Shielded Lead (Interconnecting) | Use BELDEN No. 8401 or 8421 |
| Phono Pick-up Arm Cable | Use BELDEN No. 8430 (Two Conductor-Unshielded)<br>8429 (Two Conductor-Shielded)<br>8419 (Three Conductor-Shielded) |

## TUBES

| ◆ GENERAL ELECTRIC ◆ | | | ◆ RAYTHEON ◆ SYLVANIA ◆ | | |
|---|---|---|---|---|---|
| ITEM No. | USE | TYPE | ITEM No. | USE | TYPE |
| V1 | RF Amplifier | 6CW4 | V6 | 1st Limiter | 6BN6 |
| V2 | RF Amp. -Mixer | ECC85/6AQ8 | V7 | 2nd Limiter | 6BN6 |
| V3 | Osc. -1st IF Amp. | ECF80/6BL8 | V8 | Muting Amp. -Cath. Foll. | ECC83/12AX7 |
| V4 | 2nd IF Amp. | 6AU6 | V9 | AF Amp. -Phase Inv. | ECC83/12AX7 |
| V5 | 3rd IF Amp. | 6AU6 | V10 | Rectifier | EZ81/6CA4 |

## POWER RECTIFIERS & SIGNAL DIODES

| ITEM No. | CURRENT RATING (Measured) | ORIGINAL Part or Type No. | RECTIFIERS | | DIODES | | NOTES |
|---|---|---|---|---|---|---|---|
| | | | RCA PART No. | SARKES TARZIAN PART No. | GENERAL ELECTRIC PART No. | RAYTHEON PART No. | |
| X1 | | BA100 | | | | 1N34A | AFC |
| X2 | | 1N87 | | | | 1N87 | Level Meter Rectifier |

## ELECTROLYTIC CAPACITORS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | CAP. | VOLT. | Harman-Kardon PART No. | AEROVOX PART No. | CORNELL-DUBILIER PART No. | GENERAL ELECTRIC PART No. | MALLORY PART No. | PYRAMID PART No. | SPRAGUE PART No. |
| C1A | ▲50 | 400 | JV3655080 | AFH2-59 | B0450 | XC2-33 | FP239 | TMD-2655 | TVL-2767 |
| B | ▲50 | 350 | | | | | | | |
| C2A | ▲50 | 300 | JV3655079 | AFH2-23 | C0194 | XC3-40 | FP327, 89 | TMT-3304 | TVLS-3580.7* |
| B | ■50 | 300 | | PRS1585 | | | | | |
| C | ▲50 | 250 | | | | | | | |
| C3 | 500 | 25 | JV3654549 | AFH1-13 | A0160 | XC1-25 | WP065 | TMS-1160 | TVL-1330 |
| C4 | 2 | 25 | | PTT75 | NLW2-50 | MT1-1 | TT50X2 | MLV2-50 | TE-1201 |

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

## FIXED CAPACITORS

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
| C5 | 1-10 | | | 829-10 | | | | |
| C6 | 22 NPO 10% | | NPO-DI 22 | DTZ-22 | C10Q22C | CCTO-220 | CNO-422 | 10TCC-Q22 |
| C7 | 1-10 | | | 829-10 | | | | |
| C8 | 15 NPO 10% | | NPO-DI 15 | DTZ-15 | C10Q15C | CCTO-150 | CNO-415 | 10TCC-Q15 |
| C9 | .002 | | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D20 |
| C10 | 470 10% | | DI-470 | DD-471 | 5R5T47 | CCD-471 | GP347 | 10TS-T47 |
| C11 | .001 10% | | DI-1000 | DD-102 | 5R5D1 | CCD-102 | GP210 | 10TS-D10 |
| C12 | .001 10% | | DI-1000 | DD-102 | 5R5D1 | CCD-102 | GP210 | 10TS-D10 |
| C13 | .002 | | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D20 |
| C14 | 470 10% | | DI-470 | DD-471 | 5R5T47 | CCD-471 | GP347 | 10TS-T47 |
| C15 | 1.5 | | | | | | | |
| C16 | .001 | | BPD-001 | DD-102 | BYA10D1 | CCD-102 | B-210 | 5HK-D10 |
| C17 | .002 | | EF-001 | MFT-1000 | | CCF-202 | CT280A | |
| C18 | .001 | | BPD-001 | DD-102 | BYA10D1 | CCD-102 | B-210 | 5HK-D10 |
| C19 | 1-10 | | | 829-10 | | | | |
| C20 | 10 NPO | | | | | | | |
| C21 | 6 NPO 10% | | | | C10V6C | | | |

## FIXED CAPACITORS (cont)

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
| C22 | 1.5 10% | | NPO-SI 1.5 | TCZ-1R5 | C10V15C | | CNO-515 | 10TCC-V15 |
| C23 | 2-7.5 | | | 829-7 | | | | |
| C24 | 10 NPO | | NPO-DI 10 | DTZ-10 | C10Q1C | CCTO-100 | CNO-410 | 10TCC-Q10 |
| C25 | 18 NPO | | NPO-DI 20 | TCZ-18 | C10Q18C | CCTO-180 | CNO-418 | 10TCC-Q18 |
| C26 | 47 N750 10% | | N750-DI 47 | DTN-47 | C10Q47U | CCTN-470 | CN7-447 | 10TCU-Q47 |
| C27 | 6 NPO 10% | | | | C10V6C | | | |
| C28 | 10 P100 | | | | | ■ | | |
| C29 | 4.7 NPO | | NPO-DI 4.7 | DTZ-4R7 | C10V47C | CCTO-4R7 | CNO-547 | 10TCC-V47 |
| C30 | .002 | | EF-001 | MFT-1000 | | CCF-102 | CT280A | |
| C31 | .02 | | BPD-02 | DD-203 | BYB6S2 | CCD-203 | B-120 | 5HK-S20 |
| C32 | .001 | | BPD-001 | DD-102 | BYA10D1 | CCD-102 | B-210 | 5HK-D10 |
| C33 | 18 NPO 10% | | NPO-DI 20 | TCZ-18 | C10Q18C | CCTO-180 | CNO-418 | 10TCC-Q18 |
| C34 | .002 | | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D20 |
| C35 | .002 | | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D20 |
| C36 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C37 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C38 | .002 | | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D20 |
| C39 | .002 | | EF-001 | MFT-1000 | | CCF-102 | CT280A | |
| C40 | .001 | Note 1 | BPD-001 | DD-102 | BYA10D1 | CCD-102 | B-210 | 5HK-D10 |
| C41 | .002 | | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D20 |
| C42 | .002 | | EF-001 | MFT-1000 | | CCF-102 | CT280A | |
| C43 | 220 | | DI-220 | DD-221 | L10T22 | CCD-221 | B-322 | 10TS-T22 |
| C44 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C45 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C46 | .01 | Note 1 | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C47 | .05 | | BPD-05 | DD-503 | CUB4S5 | 4DP-3-503 | GP150 | 5HK-S50 |
| C48 | .02 | | BPD-02 | DD-203 | BYB6S2 | CCD-203 | B-120 | 5HK-S20 |
| C49 | .003 10% | | DI-3000 | | 5R5D3 | CCD-302 | JL-233 | 10TS-D30 |
| C50 | .001 10% | | DI-1000 | DD-102 | 5R5D1 | CCD-102 | GP210 | 10TS-D10 |
| C51 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C52 | 220 10% | | DI-220 | DD-221 | L10T22 | CCD-221 | GP322 | 10TS-T22 |
| C53 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C54 | .002 | | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D20 |
| C55 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C56 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C57 | 100 N750 | | N750-DI 100 | DTN-100 | C10T1U | CCTN-101 | CN7-310 | 10TCU-T10 |
| C58 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C59 | 10 NPO 10% | | NPO-DI 10 | DTZ-10 | C10Q1C | CCTO-100 | CNO-410 | 10TCC-Q10 |
| C60 | .02 | | BPD-02 | DD-203 | BYB6S2 | CCD-202 | B-120 | 5HK-S20 |
| C61 | .02 | | BPD-02 | DD-203 | BYB6S2 | CCD-203 | B-120 | 5HK-S20 |
| C62 | .1 200V | | P288N-1 | DF-104 | CUB2P1 | 2DP-3-104 | GEM-201 | 2TM-P10 |
| C63 | .47 200V | | P288N-47 | | CUB2P47 | 2DP-5-474 | GEM-2047 | 2TM-P47 |
| C64 | 500 10% | | DI-500 | DD-501 | 5R5T5 | CCD-501 | GP350 | 10TS-T50 |
| C65 | .1 200V | | P288N-1 | DF-104 | CUB2P1 | 2DP-3-104 | GEM-201 | 2TM-P10 |
| C66 | 47 200V | | P288N-47 | | CUB2P47 | 2DP-5-474 | GEM-2047 | 2TM-P47 |
| C67 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C68 | .047 400V | | P488N-047 | DD-503 | CUB4S47 | 4DP-3-473 | GEM-4147 | 4TM-S47 |
| C69 | .05 | | BPD-05 | DD-503 | CUB4S5 | 4DP-3-503 | GP150 | 5HK-S50 |
| C70 | 10 NPO 10% | | NPO-DI 10 | DTZ-10 | C10Q1C | CCTO-100 | CNO-410 | 10TCC-Q10 |
| C71 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C72A | .01 1400V | | DAC-27 | DD16-103 | HVE16S1 | 16DP-3-103 | UAC-110 | BL-S10 |
| B | .01 1400V | | DAC-27 | DD16-103 | HVE16S1 | 16DP-3-103 | | BL-S10 |

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
Note 1. Not used in some versions.

## CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | USE | RESISTANCE | REPLACEMENT DATA | | | | |
|---|---|---|---|---|---|---|---|
| | | | Harman-Kardon PART No. | CENTRALAB PART No. | CLAROSTAT PART No. | CTS-IRC PART No. | MALLORY PART No. |
| R1 | Loudness | 250K | ER3654609 | B-51, or (AB-51, AK-11) TT-59, or BX-59 | A47-250K-Z/ KSS-3 B-47-500K-S | Q13-130, or (BU1, CF23, SS1, DC1)† B11-133, TM4, or (BU11, CF16, SS6) † | U44 or (UA254A) BTA55L, or TA55L |
| R2 | Muting Threshold | 500K | ER3654563 | | | | |

† "SNAPTROL".

# PARTS LIST AND DESCRIPTIONS (Continued)

## RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | RATING | REPLACEMENT DATA | | |
|---|---|---|---|---|
| | | IRC PART No. | WORKMAN PART No. | REMARKS |
| R3 | 47K | | | |
| R4 | 47K | | | |
| R5 | 100K | | | |
| R6 | 27K | | | |
| R7 | 27K | | | |
| R8 | 39Ω | | | |
| R9 | 220Ω | | | |
| R10 | 1meg | | | |
| R11 | 150K | | | |
| R12 | 22K | | | |
| R13 | 1000Ω | | | |
| R14 | 1000Ω | | | |
| R15 | 1000Ω | | | |
| R16 | 27K | | | |
| R17 | 100Ω | | | |
| R18 | 680K | | | |
| R19 | 2.2meg | | | |
| R20 | 220K | | | |
| R21 | 150K | | | |
| R22 | 12K | | | (22K) * |
| R23 | 27K | | | (150K) * |
| R24 | 100Ω | | | |
| R25 | 8200Ω | | | |
| R26 | 1000Ω | | | |
| R27 | 22K | | | |
| R28 | 220Ω | | | |
| R29 | 100K | | | |
| R30 | 3300Ω | | | |
| R31 | 100K | | | |
| R32 | 470K | | | |
| R33 | 100K | | | |
| R34 | 22K | | | |
| R35 | 1000Ω | | | |
| R36 | 22K | | | |

| ITEM No. | RATING | REPLACEMENT DATA | | |
|---|---|---|---|---|
| | | IRC PART No. | WORKMAN PART No. | REMARKS |
| R37 | 220Ω | | | |
| R38 | 100K | | | |
| R39 | 150K | | | |
| R40 | 47K 5% | | | |
| R41 | 47K 5% | | | |
| R42 | 100K | | | |
| R43 | 1meg | | | |
| R44 | 1meg | | | |
| R45 | 2.2meg | | | |
| R46 | 100K | | | |
| R47 | 1.5meg | | | |
| R48 | 680K | | | |
| R49 | 1meg | | | |
| R50 | 10K | | | |
| R51 | 680Ω | | | |
| R52 | 270K | | | |
| R53 | 1meg | | | |
| R54 | 10K | | | |
| R55 | 100K | | | |
| R56 | 680Ω | | | |
| R57 | 470K | | | |
| R58 | 33K | | | |
| R59 | 1meg | | | |
| R60 | 100K | | | |
| R61 | 1200Ω | | | |
| R62 | 12K 3W | PW3-12K | 3G-12K | |
| R63 | 22K | | | |
| R64 | 330Ω 5W | PW5-330 | 5G-330 | |
| R65 | 330Ω 5W | PW5-330 | 5G-330 | |
| R66 | 330Ω 5W | PW5-330 | 5G-330 | |
| R67 | 220Ω 5W | PW5-220 | 5G-220 | |
| R68 | 39Ω | | | |
| R69 | 39Ω | | | |

* Alternate Value

## TRANSFORMER (POWER)

| ITEM No. | RATING | | | REPLACEMENT DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. 1 | SEC. 2 | Harman-Kardon PART No. | Merit PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. | |
| T1 | 117V @ .6A | 560VCT @ .070A DC | 6.3V @ .6A | FT3654561 | | | | | |
| | SEC. 3 | SEC. 4 | SEC. 5 | | | | | | |
| | 6.3V @ 2.7A | | | | | | | | |

## COMPONENT COMBINATIONS

| ITEM No. | USE | DESCRIPTION | Harman-Kardon PART No. | REPLACEMENT DATA |
|---|---|---|---|---|
| K1 | 1st IF Grid Bias | .0068mfd, 470K | PC3634229 | |

## FUSES

| ITEM No. | TYPE | RATING | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Harman-Kardon PART No. | | LITTELFUSE PART No. | | BUSS PART No. | |
| | | | FUSE | HOLDER | FUSE | HOLDER | FUSE | HOLDER |
| M1 | 3AG | 2A 250V | | | 312002 (3AG 2A 250V) | 342001 | AGC 2 | HKP |

## COILS (RF-IF)

| ITEM No. | USE | REPLACEMENT DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|
| | | Harman-Kardon PART No. | Merit PART No. | Miller PART No. | Stancor PART No. | Workman PART No. | |
| L1 | Ant. | GL3654595 | | | | | |
| L2 | Ant. | GL3654596 | | | | | |
| L3 | RF Choke (1.7uh) | | BC-562 | 4604 | RTC-8516 | T856 | |
| L4 | RF Choke (.24uh) | | | 4584 | RTC-8512 | T957 | |
| L5 | RF Choke (1uh) | | BC-561 | 4602 | RTC-8515 | T855 | |
| L6 | Fil. Choke (3.3uh) | | BC-564 | 4608 | RTC-8518 | T858 | |
| L7 | RF Choke (.24uh) | | | 4584 | RTC-8512 | T957 | |
| L8 | RF Choke (4.7uh) | | SW-631 | 4609 | RTC-8519 | T959 | |
| L9 | RF | GL3634216 | | | | | |
| L10 | Osc. | GL3634217 | | | | | |
| L11 | RF Choke (1uh) | | BC-561 | 4602 | RTC-8515 | T855 | |
| L12 | 1st IF | GL3634212 | | | | | |
| L13 | 2nd IF | GT3774580 | FM-254 | 1463 | RTC-8599 | T633 | |
| L14 | 3rd IF | GT3774647 | FM-254 | 1463 | RTC-8599 | T633 | |
| L15 | 4th IF | GT3774648 | FM-254 | 1463 | RTC-8599 | T633 | |
| L16 | Limiter | GL3654578 | | 1463 ① | | | ① Disregard Secondary |
| L17 | RF Choke (80uh) | | TV-181 | 4631 | RTC-9171 | T304 | |
| L18 | Discriminator | GL3654577 | FM-253 ▲ | 1464 ▲ | RTC-8665 ▲ | T634 ▲ | ▲ Connect 2 Crystals Externally. |
| L19 | RF Choke (3.3uh) | ② | BC-564 | 4608 | RTC-8518 | T858 | ② Not always used |
| L20 | Fil. Choke (3.3uh) | | BC-564 | 4608 | RTC-8518 | T858 | |

## MISCELLANEOUS

| ITEM No. | PART NAME | Harman-Kardon PART No. | NOTES |
|---|---|---|---|
| M2 | Tuning Cap. | JV3414186 | FM, 2 Gang |
| M3 | Switch | ER3654551 | Range (Rotary Type) |
| M4 | Switch | ER3654655 | AFC (Rotary Type) |
| M5 | Switch | ER3654655 | Muting (Rotary Type) |
| M6 | Switch | ER3654551 | Power On-Off |
| M7 | Meter | M3654567 | Level |
| M8 | Meter | M3654568 | Balance |

## CABINETS & CABINET PARTS

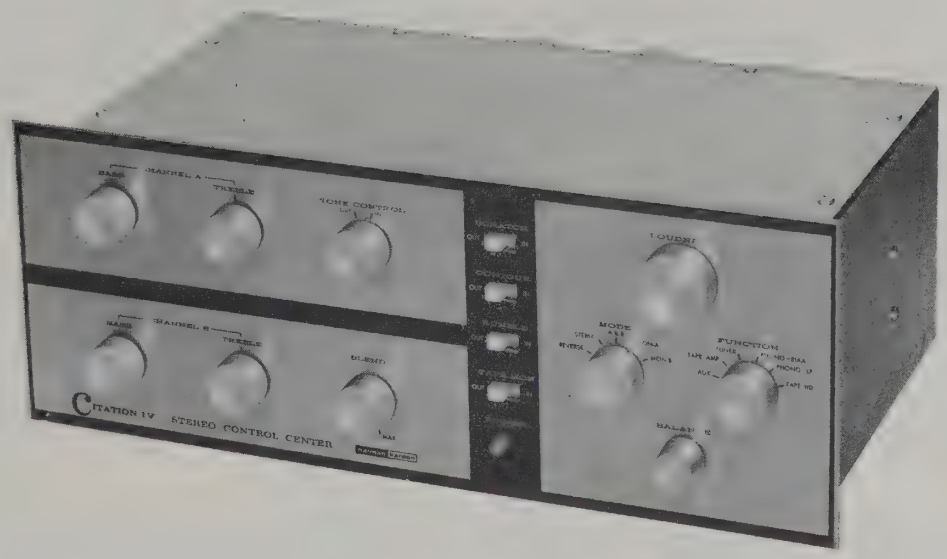
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

| NAME | PART NO. | DESCRIPTION |
|---|---|---|
| Knob | PCIT 4610 | All Except Tuning |
| Knob, Tuning | P3654613 | |

PHOTOFACT® Folder

# HARMAN-KARDON MODEL CITATION IV

HARMAN-KARDON MODEL
CITATION IV



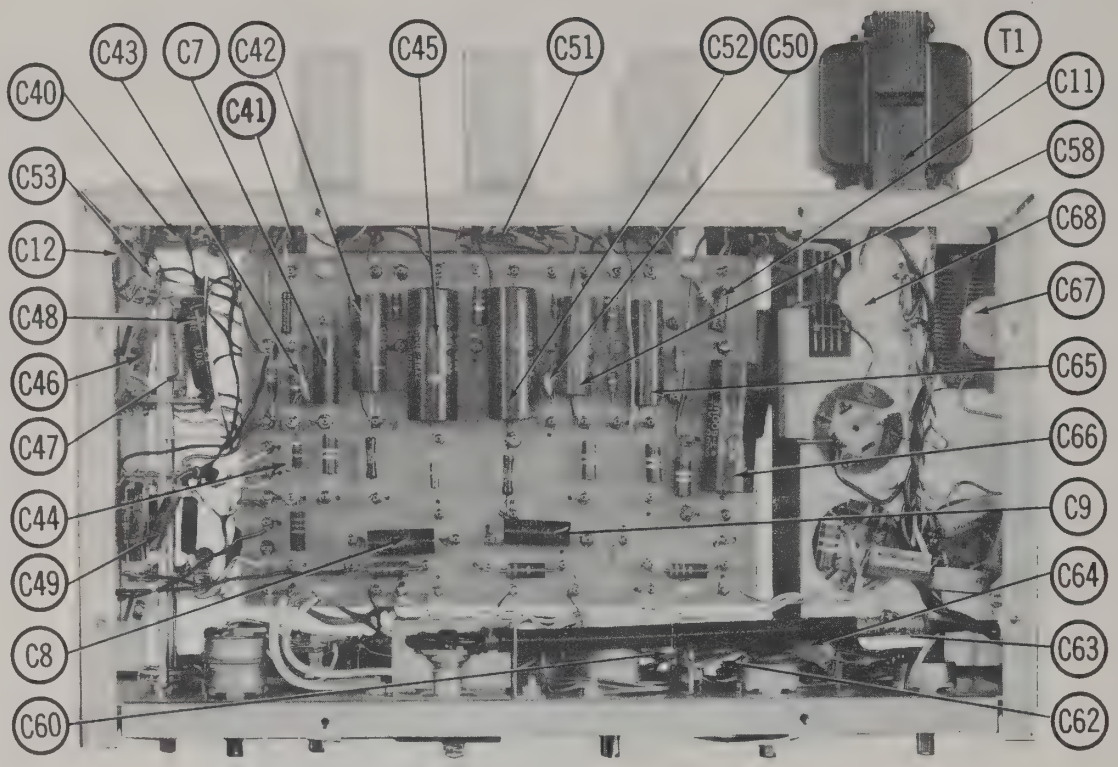

HARMAN-KARDON MODEL
CITATION IV

| | |
|---|---|
| TRADE NAME | Harman-Kardon Model Citation IV |
| MANUFACTURER | Harman-Kardon, Inc., Ames Court, Plain View, L.I., N. Y. |
| TYPE SET | AC Operated 6 Tube Stereo Preamplifier |
| POWER SUPPLY | 105 — 125 Volts AC, 50-60 Cycles RATING 28 Watts, .3 Amp. @117 Volts AC |

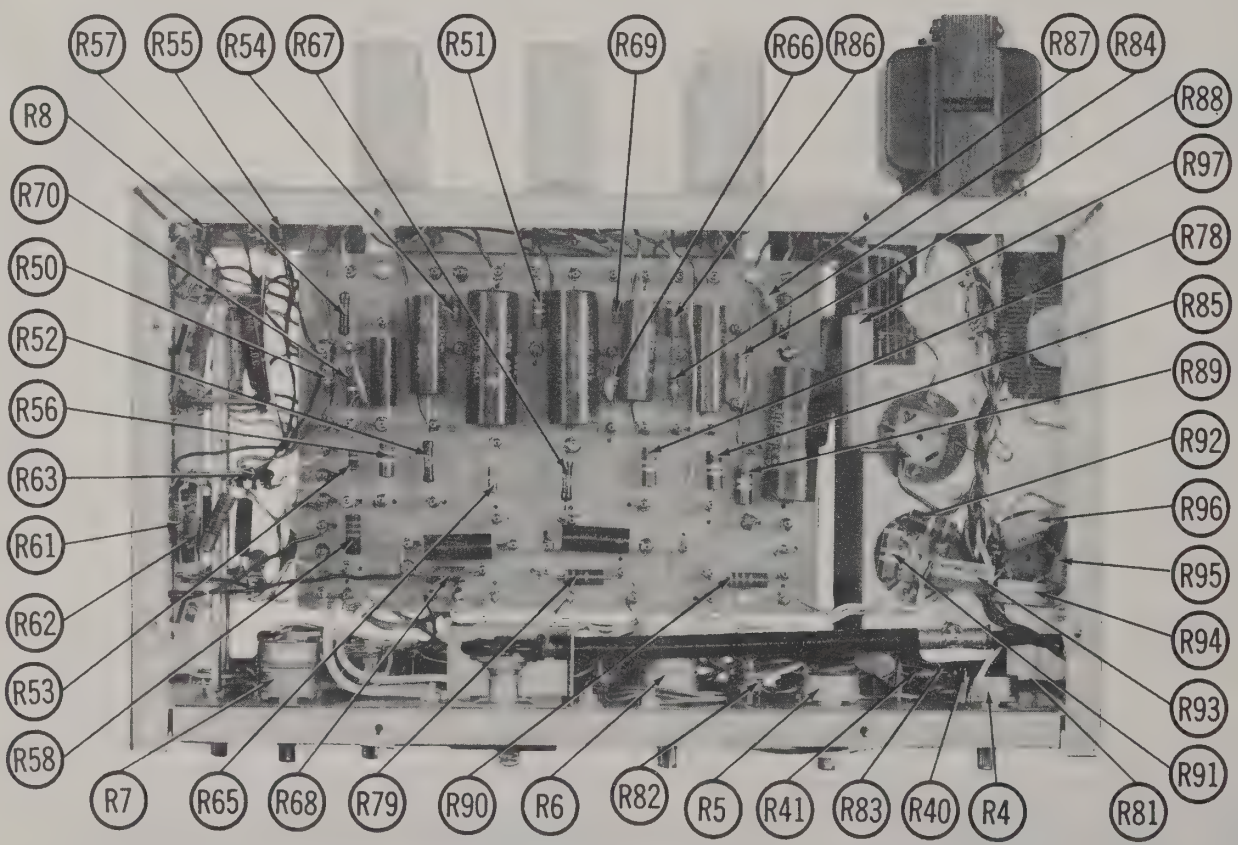
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KV895

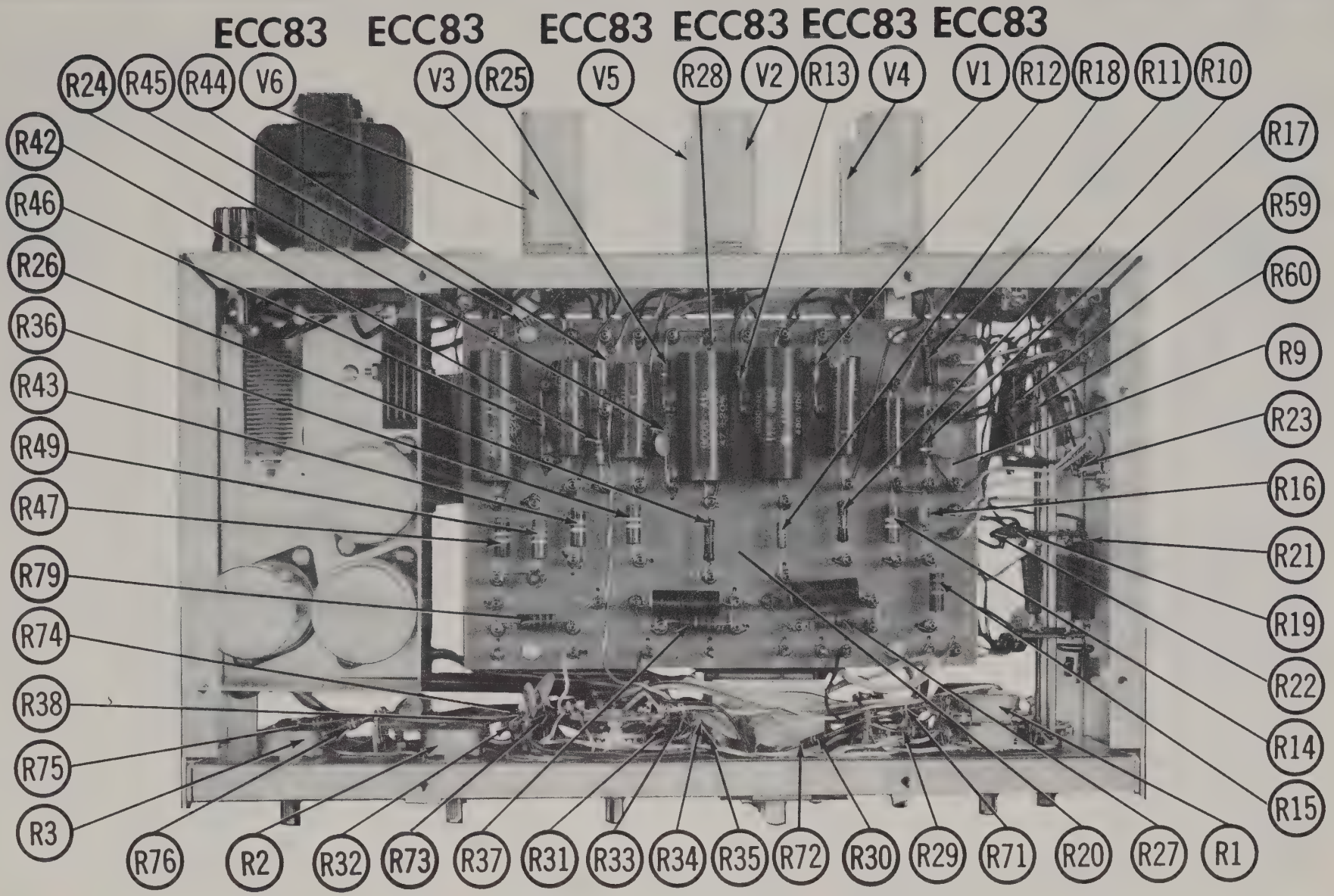
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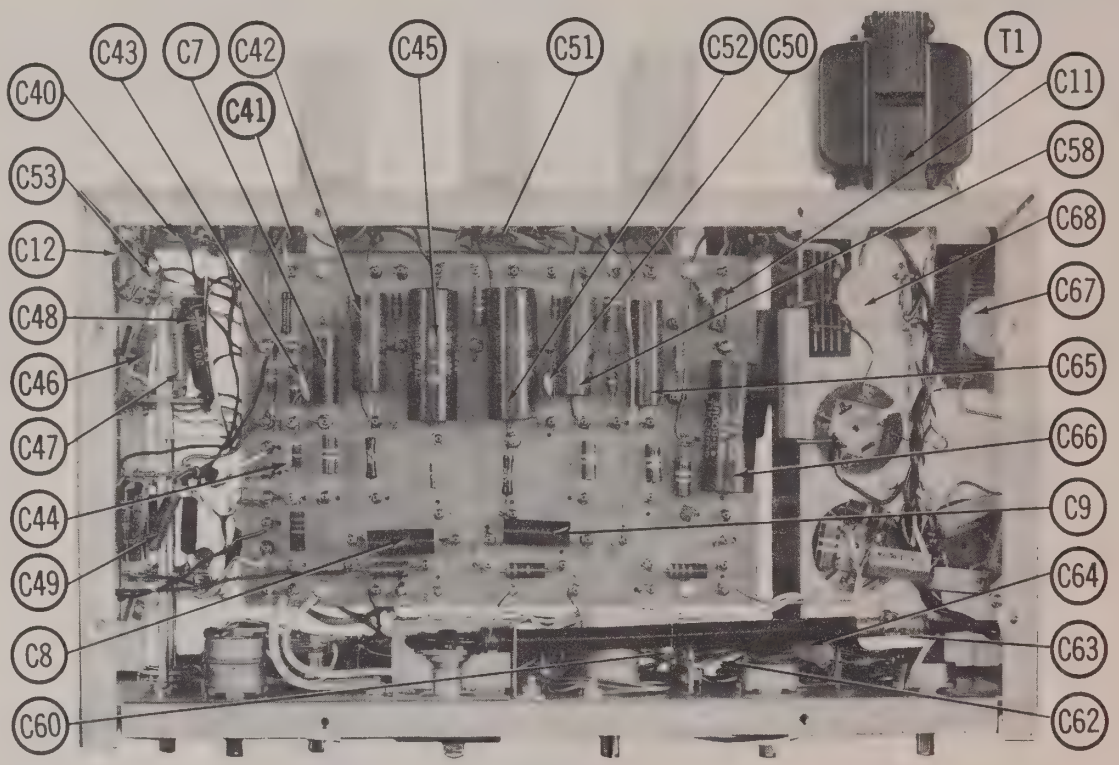

CHASSIS BOTTOM VIEW-CAPACITOR & TRANSFORMER IDENT.



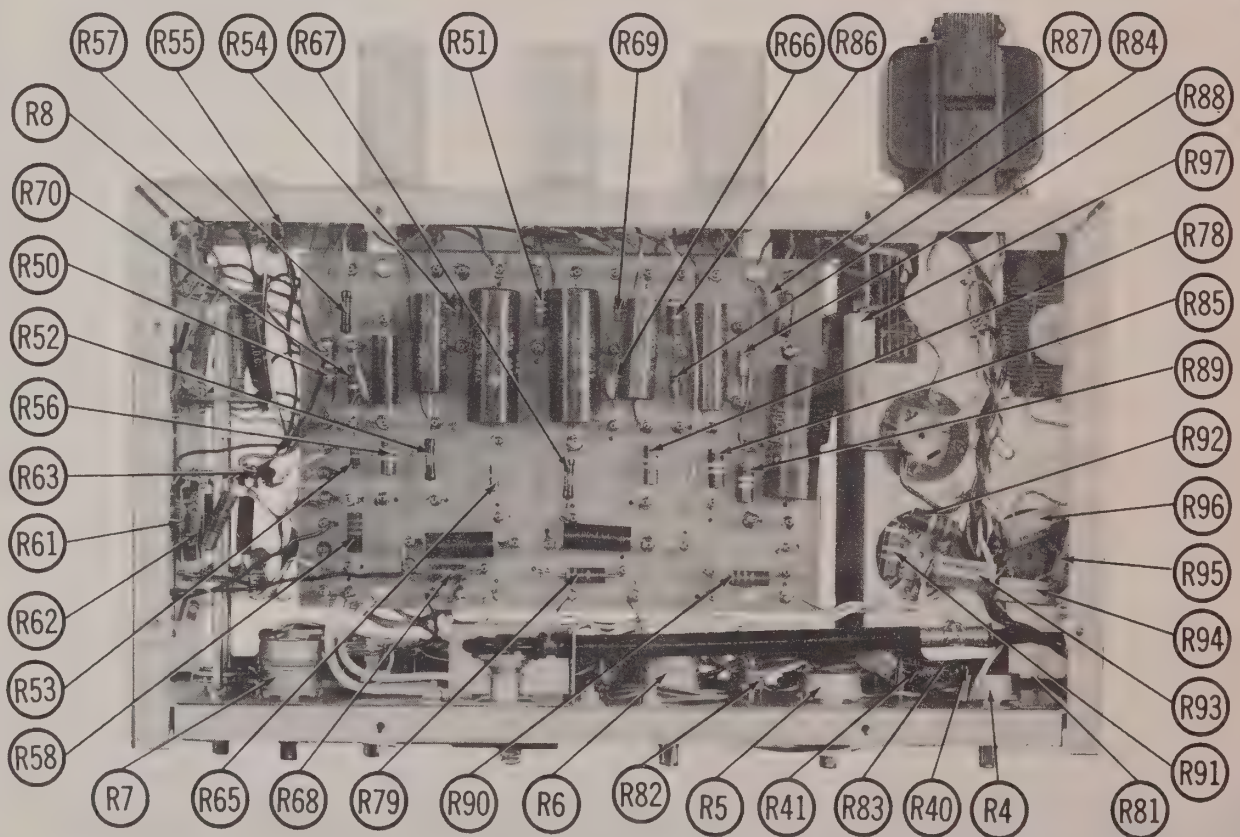

CHASSIS BOTTOM VIEW-RESISTOR IDENT.



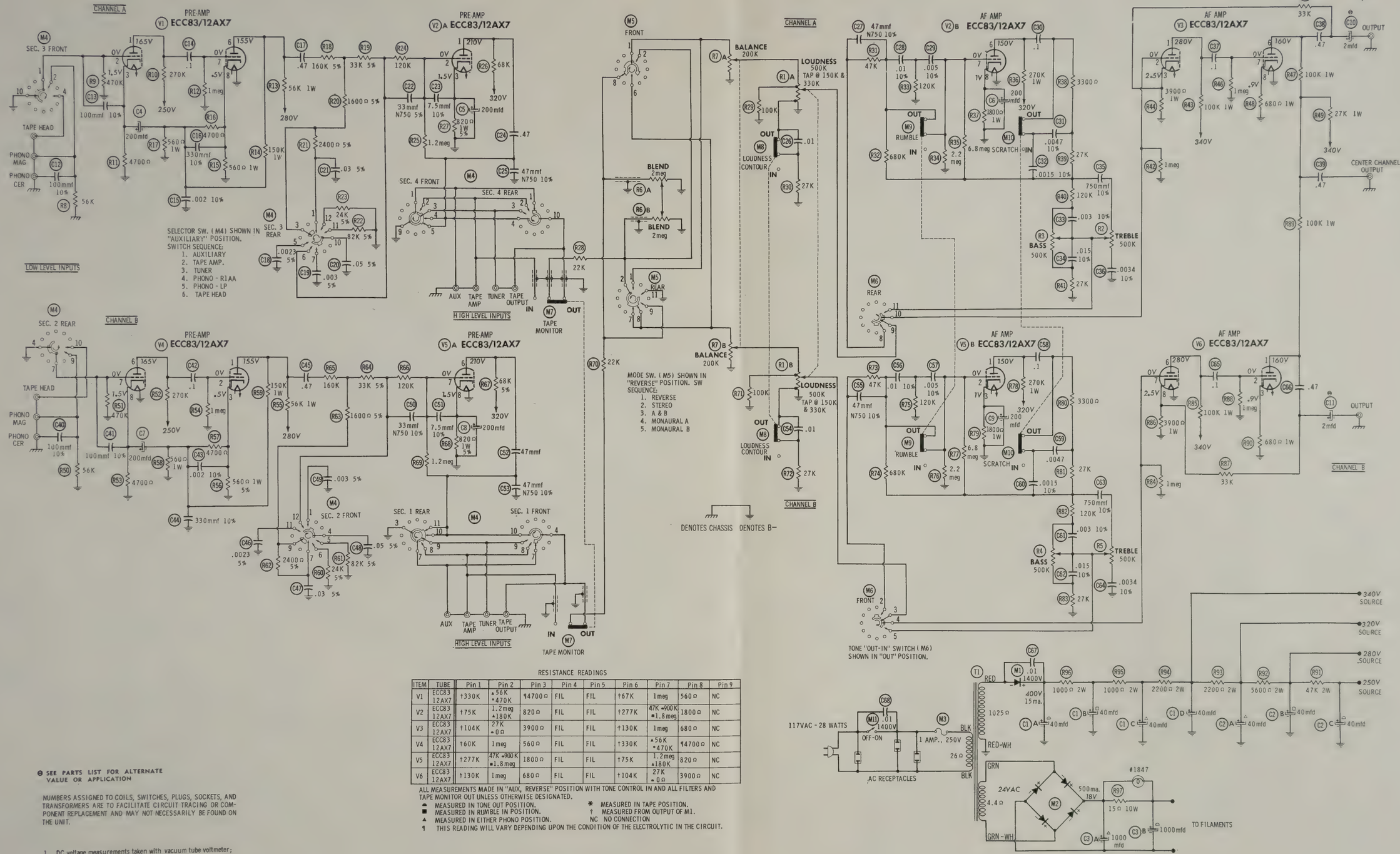

CHASSIS TOP VIEW - RESISTOR & TUBE IDENT.




CHASSIS BOTTOM VIEW-CAPACITOR & TRANSFORMER IDENT.




CHASSIS BOTTOM VIEW-RESISTOR IDENT.




RESISTANCE READINGS

| ITEM | TUBE | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 | Pin 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| V1 | ECC83 12AX7 | †330K | ▲56K •470K | ¶4700Ω | FIL | FIL | †67K | 1meg | 560Ω | NC |
| V2 | ECC83 12AX7 | †75K | 1.2meg ▲180K | 820Ω | FIL | FIL | †277K | 47K •900K ■1.8meg | 1800Ω | NC |
| V3 | ECC83 12AX7 | †104K | 27K •0Ω | 3900Ω | FIL | FIL | †130K | 1meg | 680Ω | NC |
| V4 | ECC83 12AX7 | †60K | 1meg | 560Ω | FIL | FIL | †330K | ▲56K •470K | ¶4700Ω | NC |
| V5 | ECC83 12AX7 | †277K | 47K •900K ■1.8meg | 1800Ω | FIL | FIL | †75K | 1.2meg ▲180K | 820Ω | NC |
| V6 | ECC83 12AX7 | †130K | 1meg | 680Ω | FIL | FIL | †104K | 27K •0Ω | 3900Ω | NC |

ALL MEASUREMENTS MADE IN "AUX, REVERSE" POSITION WITH TONE CONTROL IN AND ALL FILTERS AND TAPE MONITOR OUT UNLESS OTHERWISE DESIGNATED.

- • MEASURED IN TONE OUT POSITION.
- ■ MEASURED IN RUMBLE IN POSITION.
- ▲ MEASURED IN EITHER PHONO POSITION.
- * MEASURED IN TAPE POSITION.
- † MEASURED FROM OUTPUT OF M1.
- NC NO CONNECTION
- ¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.

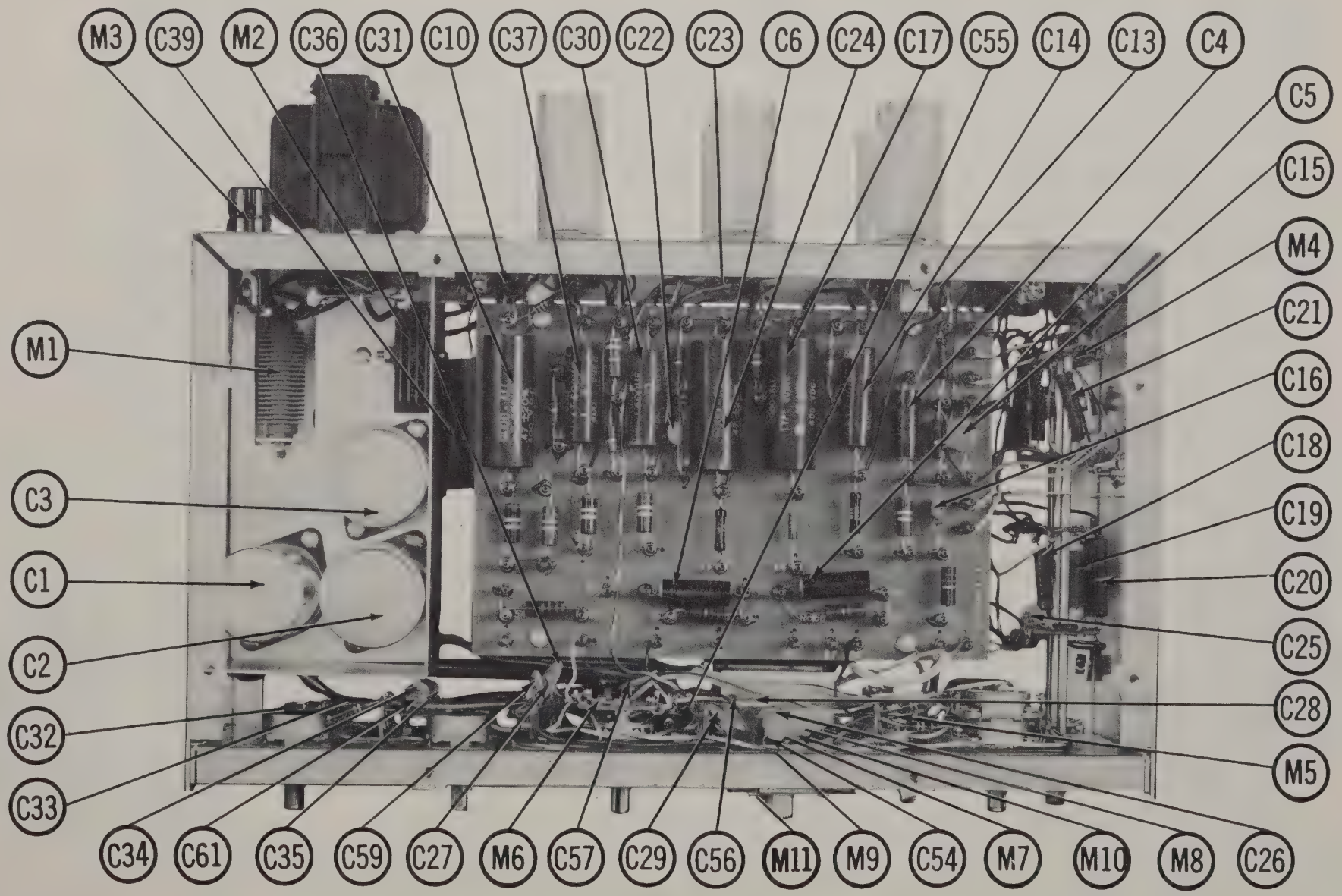
Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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**HARMAN-KARDON MODEL CITATION IV**




CHASSIS TOP VIEW-CAPACITOR & MISC. IDENT.

# PARTS LIST AND DESCRIPTIONS

## TUBES

| ITEM No. | USE | TYPE | ITEM No. | USE | TYPE |
|---|---|---|---|---|---|
| V1 | Channel A Preamp. | ECC83/12AX7 | V4 | Channel B Preamp. | ECC83/12AX7 |
| V2 | Channel A Preamp. - Channel A AF Amp. | ECC83/12AX7 | V5 | Channel B Preamp. - Channel B AF Amp. | ECC83/12AX7 |
| V3 | Channel A AF Amp. | ECC83/12AX7 | V6 | Channel B AF Amp. | ECC83/12AX7 |

## ELECTROLYTIC CAPACITORS

| ITEM No. | RATING CAP. | RATING VOLT. | REPLACEMENT DATA Harman-Kardon PART No. | AEROVOX PART No. | CORNELL-DUBILIER PART No. | GENERAL ELECTRIC PART No. | MALLORY PART No. | PYRAMID PART No. | SPRAGUE PART No. |
|---|---|---|---|---|---|---|---|---|---|
| C1A | ▲40 | 450 | JE3644865 | AFH3-44 | | XC4-80 | FP377.1 | TMT-3748 | TVL-3787 |
| B | ■40 | 450 | | PRS1750 | | | TC78 | TD-40-450 | TVA-1712 |
| C | ▲40 | 450 | | | | | | | |
| D | 40 | 450 | | | | | | | |
| C2A | ▲40 | 450 | JE3644444 | AFH3-44 | | XC3-40 | FP377.1 | TMT-3748 | TVL-3787 |
| B | ■40 | 450 | | | | | | | |
| C | ▲40 | 450 | | | | | | | |
| C3A | ▲1000 | 30 | JE3644375 | | | XC2-45 | WP201.5 | | TVLS-2243* |
| B | ▲1000 | 30 | | | | | | | |
| C4 | 200 | 3 | JE3644421 | PTT14 | NLW200-3 | MT1-22 | TT3X200 | MLV200-3 | TE-1064 |
| C5 | 200 | 3 | JE3644421 | PTT14 | NLW200-3 | MT1-22 | TT3X200 | MLV200-3 | TE-1064 |
| C6 | 200 | 3 | JE3644421 | PTT14 | NLW200-3 | MT1-22 | TT3X200 | MLV200-3 | TE-1064 |
| C7 | 200 | 3 | JE3644421 | PTT14 | NLW200-3 | MT1-22 | TT3X200 | MLV200-3 | TE-1064 |
| C8 | 200 | 3 | JE3644421 | PTT14 | NLW200-3 | MT1-22 | TT3X200 | MLV200-3 | TE-1064 |
| C9 | 200 | 3 | JE3644421 | PTT14 | NLW200-3 | MT1-22 | TT3X200 | MLV200-3 | TE-1064 |
| C10 | 2 | 50 | ① | PTT88 | NLW2-50 | MT1-1 | TC302 | MLV2-50 | TE-1301 |
| C11 | 2 | 50 | ① | PTT88 | NLW2-50 | MT1-1 | TC302 | MLV2-50 | TE-1301 |

① Some versions may use 2mfd@25V in this application (Part #JE3283790).
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

## FIXED CAPACITORS

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
|---|---|---|---|---|---|---|---|---|
| C12 | 100 10% | | DI-100 | DD-101 | L10T1 | CCD-101 | GP310 | 10TS-T10 |
| C13 | 100 10% | | DI-100 | DD-101 | L10T1 | CCD-101 | GP310 | 10TS-T10 |
| C14 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C15 | .002 10% | | DI-2000 | | PM6D2 | CCD-202 | GP220 | 10TS-D20 |
| C16 | 330 10% | | DI-330 | DD-331 | L10T33 | CCD-331 | GP333 | 10TS-T33 |
| C17 | .47 400V | | P488N-47 | | CUB4P47 | 4DP-6-474 | GEM-4047 | 4TM-P47 |
| C18 | .0023 100V 5% | | | | 1R5D24 | CM-20B-242J | | 5BF-D22 |
| C19 | .003 100V 5% | | V84C6D3-5% | | 1R5D3 | CM-20B-302J | | |
| C20 | .05 100V 5% | | V84C2S5-5% | | | | | |
| C21 | .03 100V 5% | | V84C4S3-5% | | | | | |
| C22 | 33 N750 10% | | N750-DI 33 | DTN-33 | C10Q33U | CCTN-330 | CN7-433 | 10TCU-Q33 |
| C23 | 7.5 10% | | | DD-7R5 | L10V8 | | GP580 | 10TS-V75 |
| C24 | .47 400V | | P488N-47 | | CUB4P47 | 4DP-6-474 | GEM-4047 | 4TM-P47 |
| C25 | 47 N750 10% | | N750-DI 47 | DTN-47 | C10Q47U | CCTN-470 | CN7-447 | 10TCU-Q47 |
| C26 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C27 | 47 N750 10% | | N750-DI 47 | DTN-47 | C10Q47U | CCTN-470 | CN7-447 | 10TCU-Q47 |
| C28 | .01 10% | | DI-10000 | | PM4S1 | CCD-103 | GEM-1611 | 1-TS-S10 |
| C29 | .005 10% | | DI-5000 | | PM6D5 | CCD-502 | JL-250 | 10TS-D50 |
| C30 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C31 | .0047 10% | | DI-4700 | | PM6D47 | CCD-472 | JL-247 | 10TS-D47 |
| C32 | .0015 10% | | DI-1500 | DD-152 | PM6D15 | CCD-152 | GP215 | 10TS-D15 |
| C33 | .003 10% | | DI-3000 | | PM6D3 | CCD-302 | JL-233 | 10TS-D30 |
| C34 | .015 10% | | | | PM4S15 | 4DP-1-153 | | 10TS-S15 |
| C35 | 750 10% | | DI-750 | DD-751 | 5R5T75 | CCD-751 | GP375 | 10TS-T75 |
| C36 | .0034 10% | | DI-3300 | | PM6D33 | CCD-332 | JL-233 | 10TS-D33 |
| C37 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C38 | .47 400V | | P488N-47 | | CUB4P47 | 4DP-6-474 | GEM-4047 | 4TM-P47 |
| C39 | .47 400V | | P488N-47 | | CUB4P47 | 4DP-6-474 | GEM-4047 | 4TM-P47 |
| C40 | 100 10% | | DI-100 | DD-101 | L10T1 | CCD-101 | GP310 | 10TS-T10 |

## FIXED CAPACITORS (cont)

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
|---|---|---|---|---|---|---|---|---|
| C41 | 100 10% | | DI-100 | DD-101 | L10T1 | CCD-101 | GP310 | 10TS-T10 |
| C42 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C43 | .002 10% | | DI-2000 | | PM6D2 | CCD-202 | GP220 | 10TS-D20 |
| C44 | 330 10% | | DI-330 | DD-331 | L10T33 | CCD-331 | GP333 | 10TS-T33 |
| C45 | .47 400V | | P488N-47 | | CUB4P47 | 4DP-6-474 | GEM-4147 | 4TM-P47 |
| C46 | .0023 100V 5% | | | | 1R5D24 | CM-20B-242J | | 5BF-D22 |
| C47 | .03 100V 5% | | V84C4S3-5% | | | | | |
| C48 | .05 100V 5% | | V84C2S5-5% | | | | | |
| C49 | .003 100V 5% | | V84C6D3-5% | | 1R5D3 | CM-20B-302J | | |
| C50 | 33 N750 10% | | N750-DI 33 | DTN-33 | C10Q33U | CCTN-330 | CN7-433 | 10TCU-Q33 |
| C51 | 7.5 10% | | | DD-7R5 | L10V8 | | | 10TS-V75 |
| C52 | .47 400V | | P488N-47 | | P488N-47 | 4DP-6-474 | GEM-4047 | 4TM-P47 |
| C53 | 47 N750 10% | | N750-DI 47 | DTN-47 | C10Q47U | CCTN-470 | CN7-447 | 10TCU-Q47 |
| C54 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C55 | 47 N750 10% | | N750-DI 47 | DTN-47 | C10Q47U | CCTN-470 | CN7-447 | 10TCU-Q47 |
| C56 | .01 10% | | DI-10000 | | PM4S1 | CCD-103 | GEM-1611 | 10TS-S10 |
| C57 | .005 10% | | DI-5000 | | PM6D5 | CCD-502 | JL-250 | 10TS-D50 |
| C58 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C59 | .0047 10% | | DI-4700 | | PM6D47 | CCD-472 | JL-247 | 10TS-D47 |
| C60 | .0015 10% | | DI-1500 | | PM6D15 | CCD-152 | GP215 | 10TS-D15 |
| C61 | .003 10% | | DI-3000 | | PM6D3 | CCD-302 | JL-233 | 10TS-D30 |
| C62 | .015 10% | | | | PM4S15 | 4DP-1-153 | | 10TS-S15 |
| C63 | 750 10% | | DI-750 | DD-751 | 5R5T75 | CCD-751 | GP375 | 10TS-T75 |
| C64 | .0034 10% | | DI-3300 | | PM6D33 | CCD-332 | JL-233 | 10TS-D33 |
| C65 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C66 | .47 400V | | P488N-47 | | CUB4P47 | 4DP-6-474 | GEM-4047 | 4TM-P47 |
| C67 | .01 1400V | | DAC-27 | DD16-103 | HVE16S1 | 16DP-3-103 | UAC-110 | BL-S10 |
| C68 | .01 1400V | | DAC-27 | DD16-103 | HVE16S1 | 16DP-3-103 | UAC-110 | BL-S10 |

## CONTROLS

| ITEM No. | RATING RESISTANCE | RATING WATTS | REPLACEMENT DATA Harman-Kardon PART No. | CENTRALAB PART No. | CLAROSTAT PART No. | CTS-IRC PART No. | MALLORY PART No. | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| R1A | 500K* | 1/2 | RV3644316 | | | | FA55DT334 | Loudness, Channel A |
| B | 500K* | 1/2 | | | | | RU55DT334 | Loudness, Channel B |
| C | Shaft | | | | | | CS3500 | |
| R2A | 500K | 1/2 | RV3644245 | B-60 | A47-500K-Z | Q13-133 | U48 | Treble, Channel A |
| B | Shaft | | | Not Req. | KSS-3 | Not Req. | Not Req. | |
| R3A | 500K | 1/2 | RV3644245 | B-60 | A47-500K-Z | Q13-133 | U48 | Bass, Channel A |
| B | Shaft | | | Not Req. | KSS-3 | Not Req. | Not Req. | |
| R4A | 500K | 1/2 | RV3644245 | B-60 | A47-500K-Z | Q13-133 | U48 | Bass, Channel B |
| B | Shaft | | | Not Req. | KSS-3 | Not Req. | Not Req. | |
| R5A | 500K | 1/2 | RV3644245 | B-60 | A47-500K-Z | Q13-133 | U48 | Treble, Channel B |
| B | Shaft | | | Not Req. | KSS-3 | Not Req. | Not Req. | |
| R6A | 2meg | 1/2 | RV3644315 | B-75 | AD47-2meg-S | | FA26L | Blend, Channel A |
| B | 2meg | 1/2 | | SR-75 | Not Req. | | RU26L | Blend, Channel B |
| C | Shaft | | | Not Req. | KSS-3 | | CS3500 | |
| R7A | 200K | 1/2 | RV3644314 | B-51 | | | | Balance, Channel A |
| B | 200K | 1/2 | | SR-513 | | | | Balance, Channel B |

* Taps@150K & 330K.

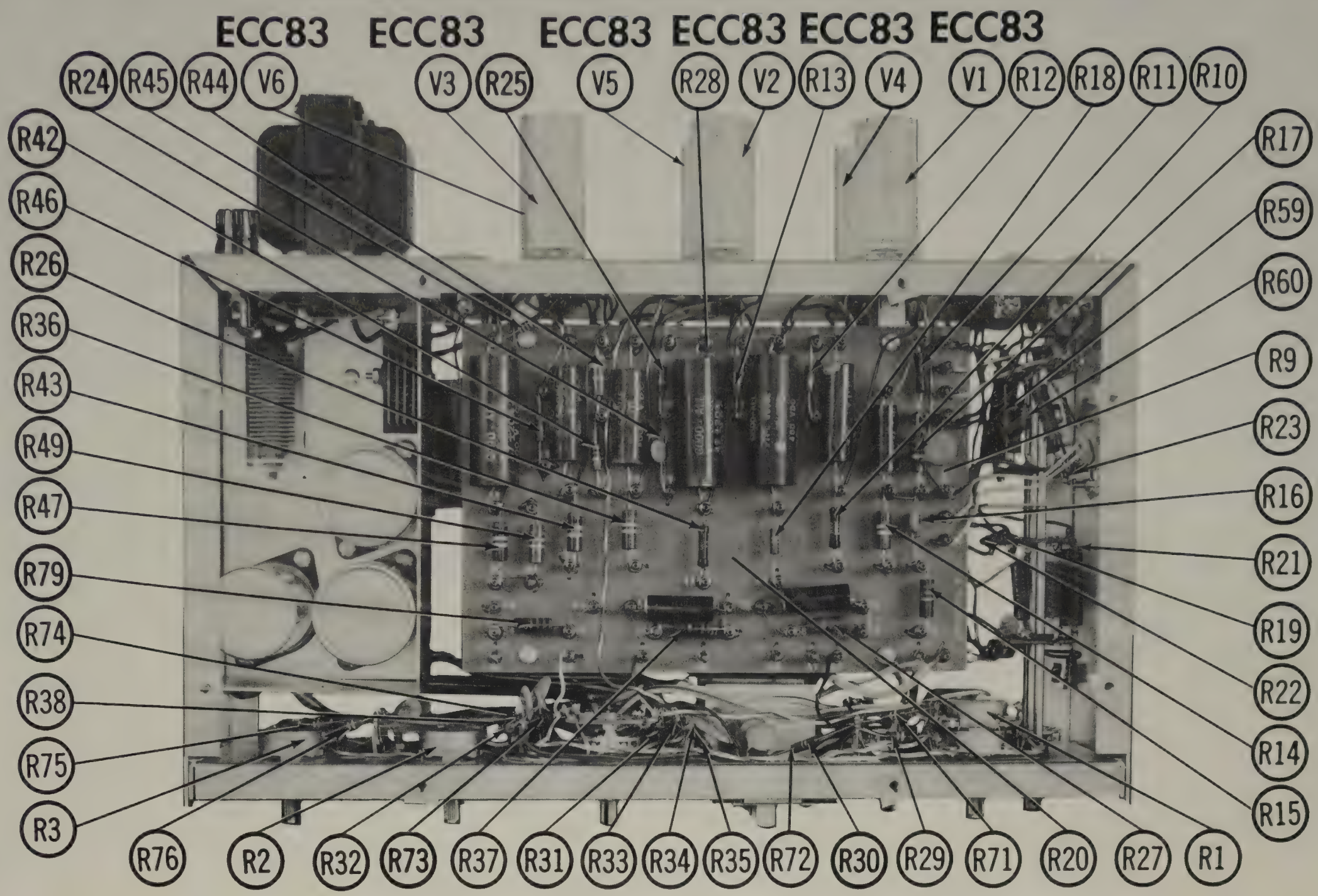
## RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | RATING | REPLACEMENT DATA IRC PART No. | WORKMAN TV PART No. | REMARKS | ITEM No. | RATING | REPLACEMENT DATA IRC PART No. | WORKMAN TV PART No. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| R8 | 56K | | | | R13 | 56K 1W | | | |
| R9 | 470K | | | | R14 | 150K 1W | | | |
| R10 | 270K | | | | R15 | 560Ω 1W | | | |
| R11 | 4700Ω | | | | R16 | 4700Ω | | | |
| R12 | 1meg | | | | R17 | 560Ω 1W | | | |



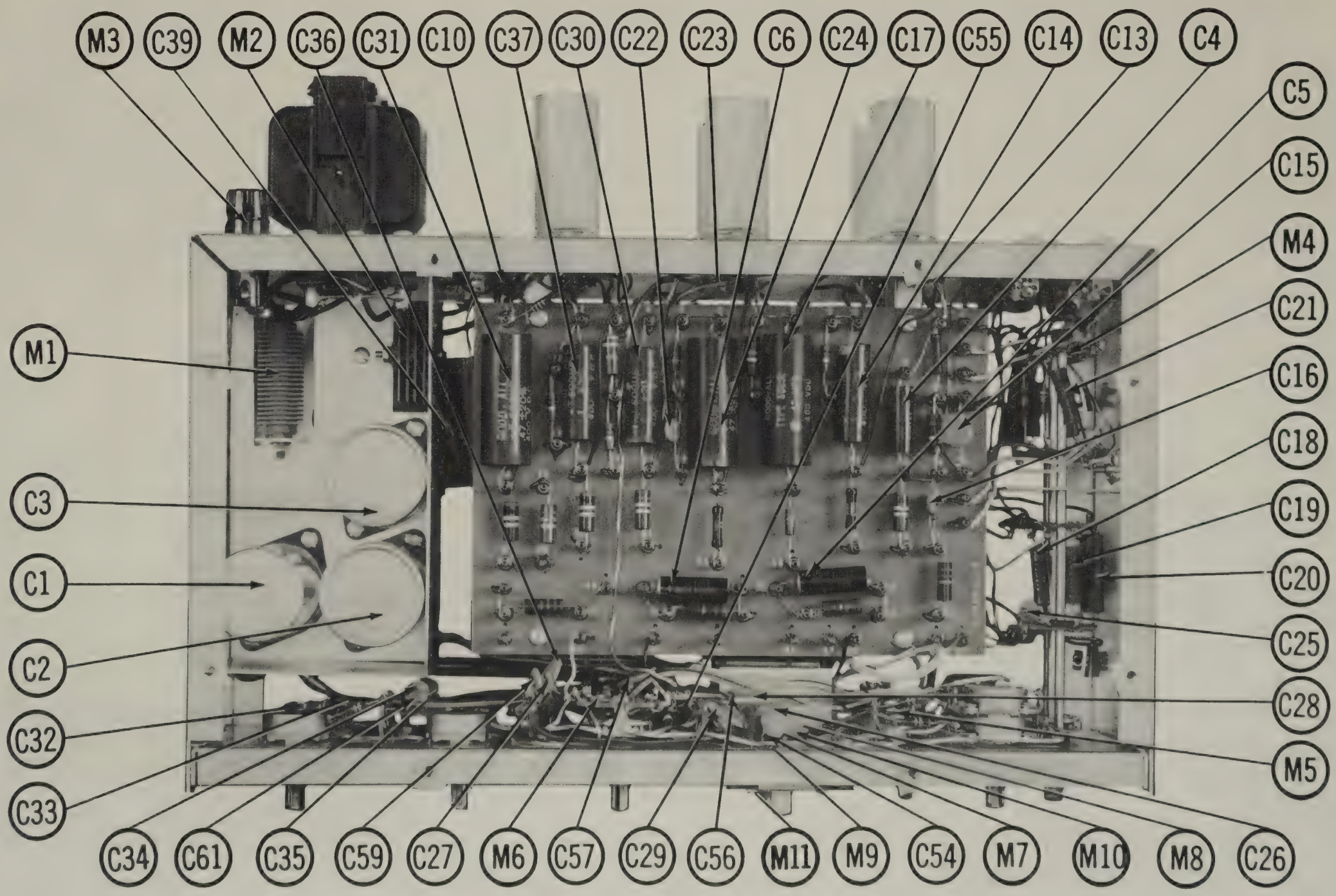
FOLDER 11
CITATION IV
HARMAN-KARDON MODEL




CHASSIS TOP VIEW - RESISTOR & TUBE IDENT.





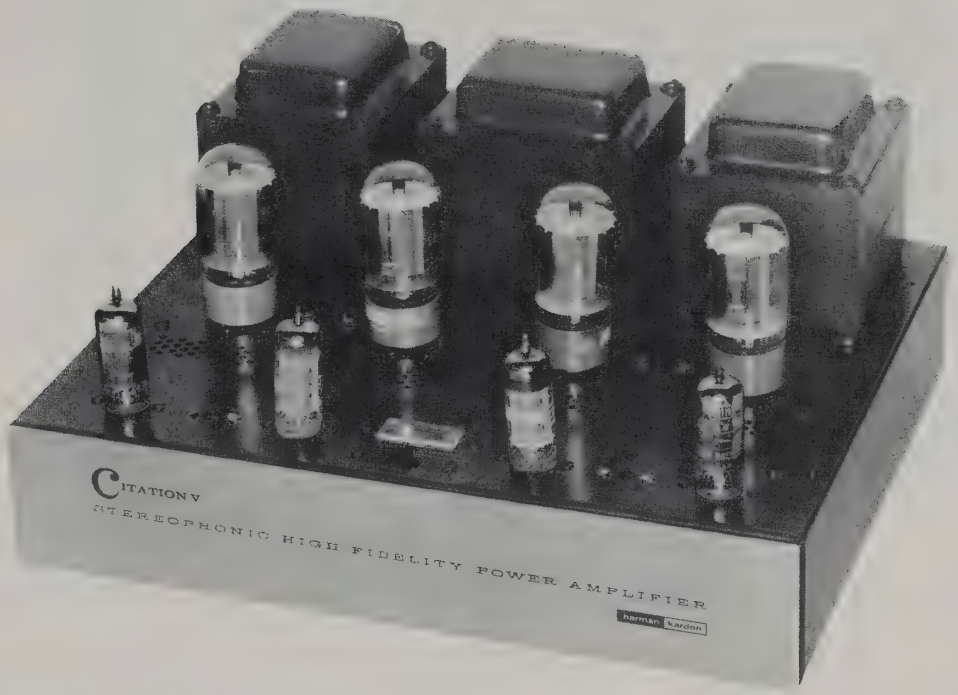



CHASSIS TOP VIEW-CAPACITOR & MISC. IDENT.

PHOTOFACT® Folder

# HARMAN-KARDON MODEL CITATION V

HARMAN-KARDON
MODEL CITATION V



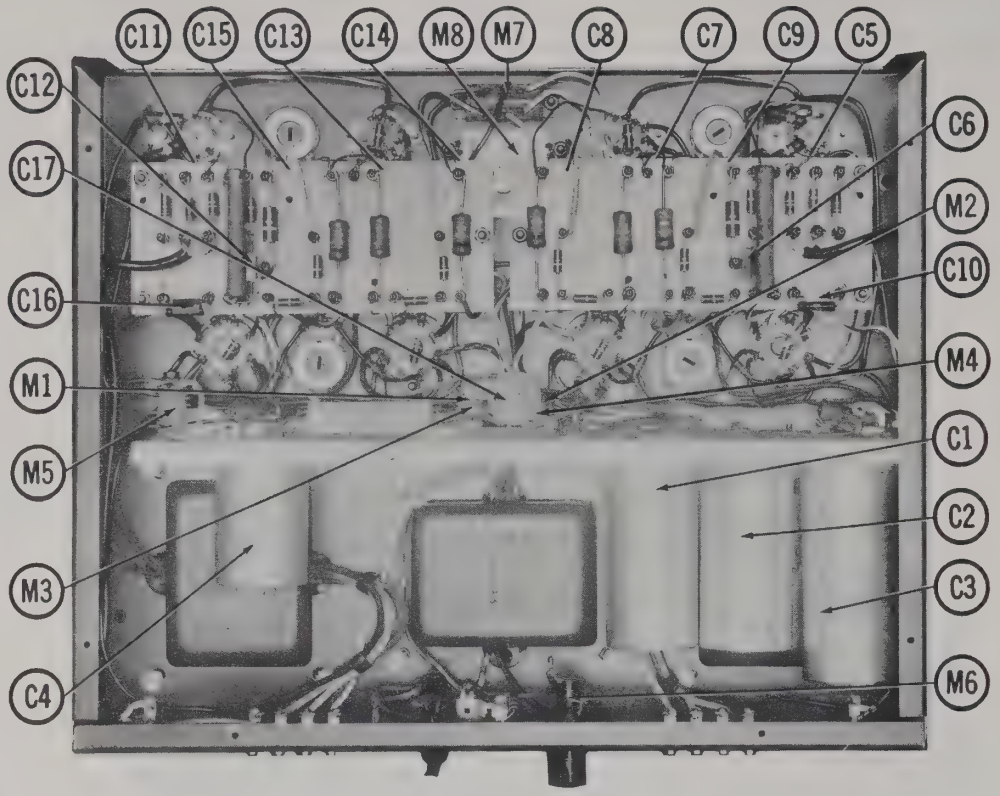

HARMAN-KARDON
MODEL CITATION V

| | |
|---|---|
| TRADE NAME | Harman-Kardon Model Citation V |
| MANUFACTURER | Harman-Kardon, Inc., Ames Court, Plainview, L.I., N.Y. |
| TYPE SET | AC Operated 8 Tube Stereo Amplifier |
| POWER SUPPLY | 110 — 120 Volts AC, 60 Cycles RATING 200 Watts, 2.1 Amp. @117 Volts AC |

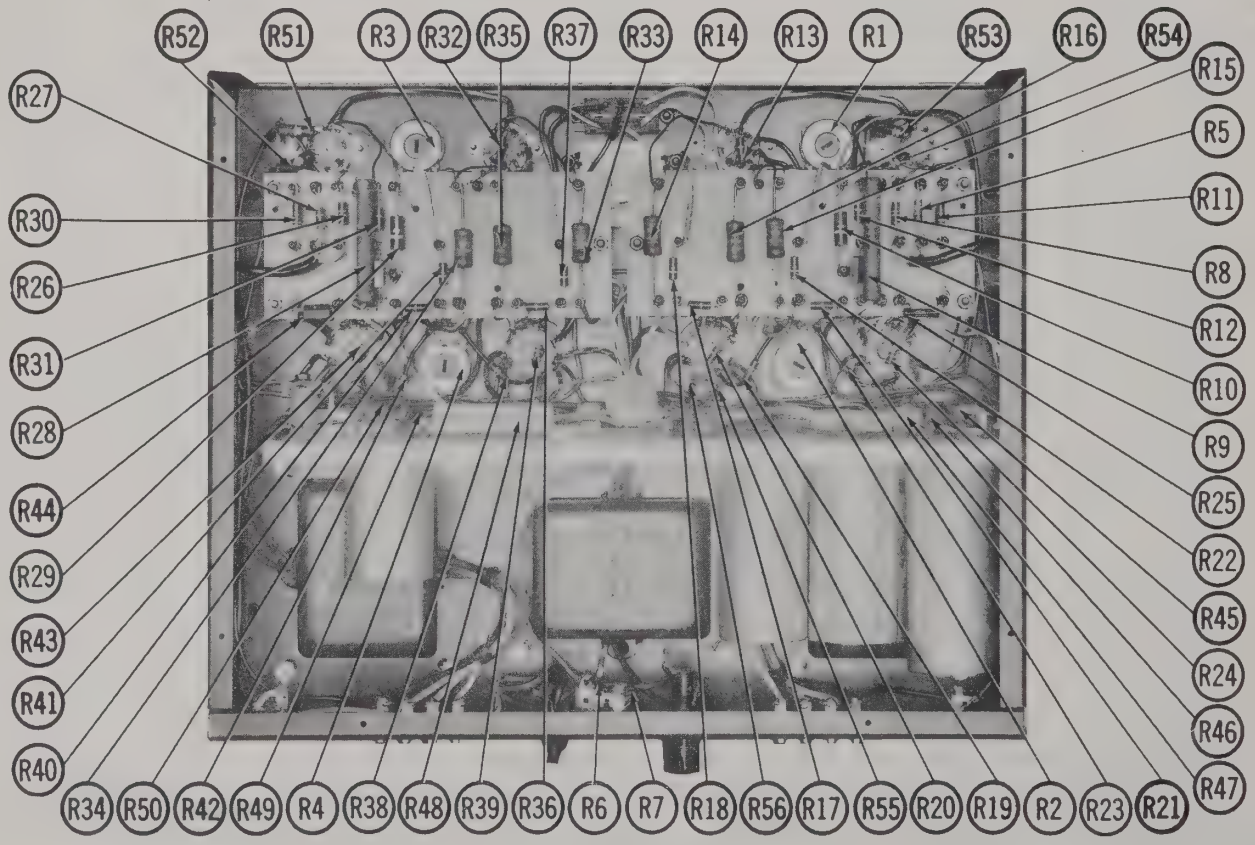
**HOWARD W. SAMS & CO., INC.** Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1962 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

KV910




CHASSIS BOTTOM VIEW-CAPACITOR & MISC. IDENT.




CHASSIS BOTTOM VIEW-RESISTOR IDENT.

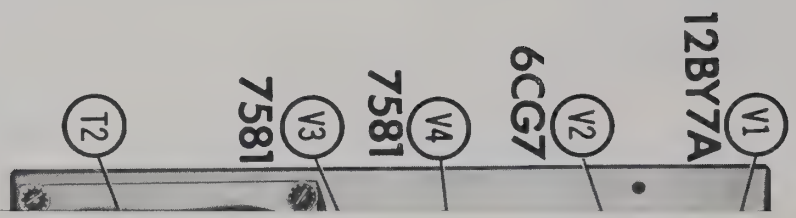
# PARTS LIST AND DESCRIPTIONS

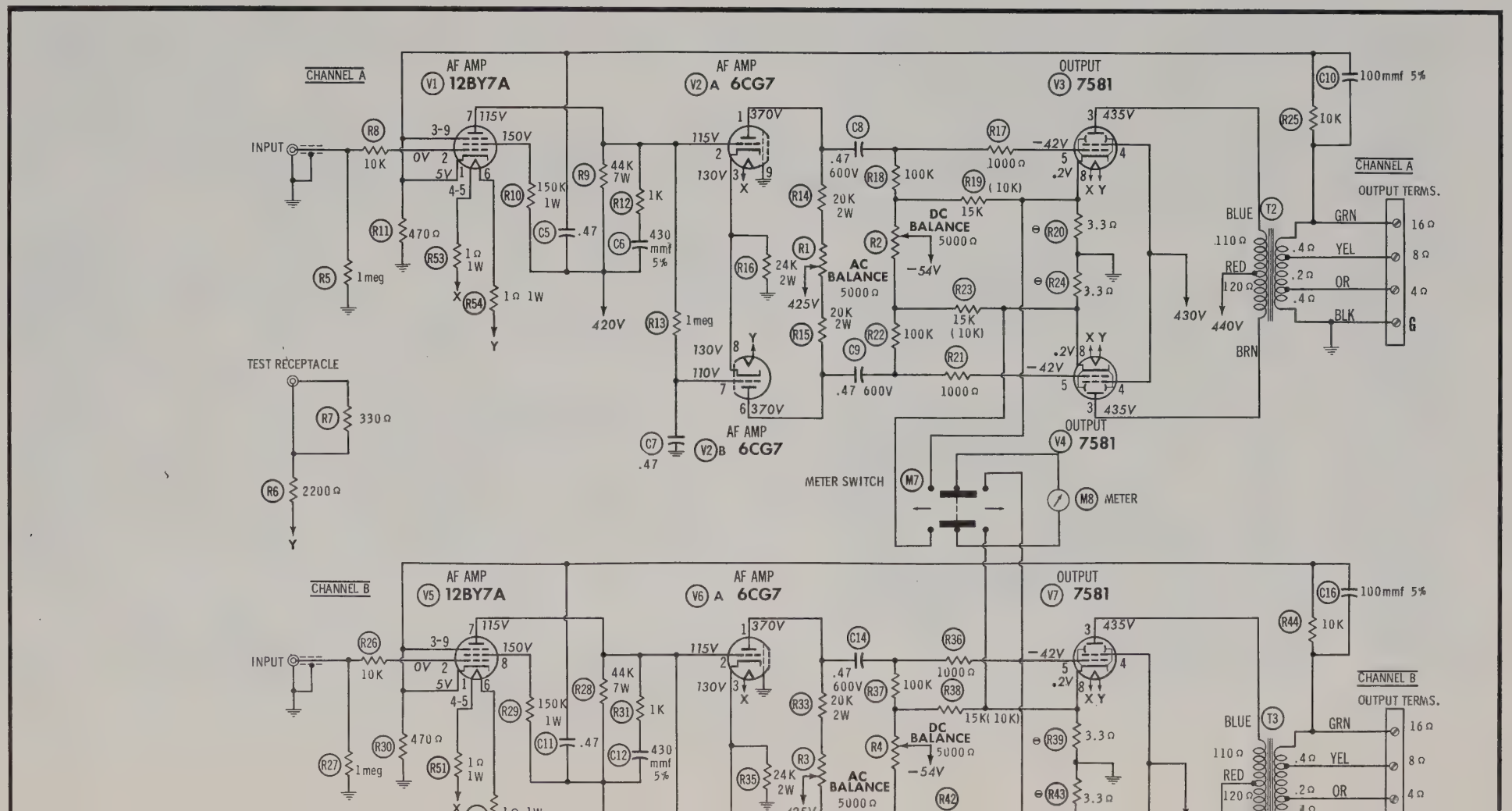
## TUBES

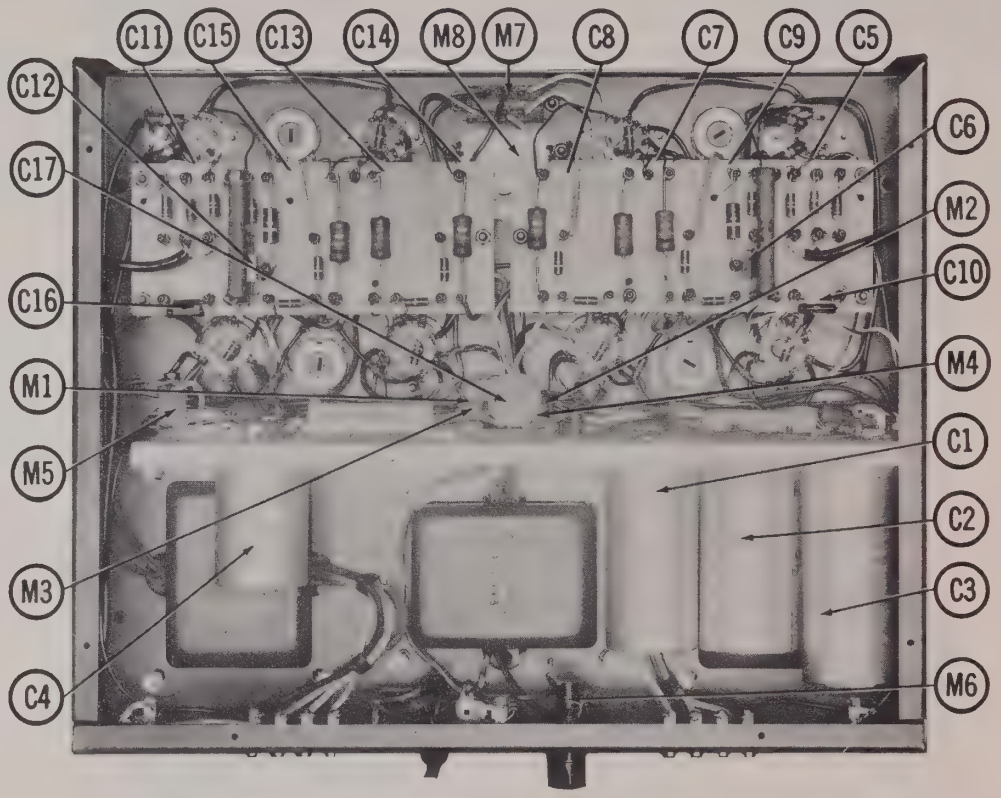
| • GENERAL ELECTRIC • RAYTHEON • SYLVANIA • | | | | | |
|---|---|---|---|---|---|
| ITEM No. | USE | TYPE | ITEM No. | USE | TYPE |
| V1 | Channel A AF Amp. | 12BY7A | V5 | Channel B AF Amp. | 12BY7A |
| V2 | Channel A AF Amp. - Channel A Phase Inv. | 6CG7 | V6 | Channel B AF Amp. - Channel B Phase Inv. | 6CG7 |
| V3 | Channel A Output | 7581 | V7 | Channel B Output | 7581 |
| V4 | Channel A Output | 7581 | V8 | Channel B Output | 7581 |

## ELECTROLYTIC CAPACITORS

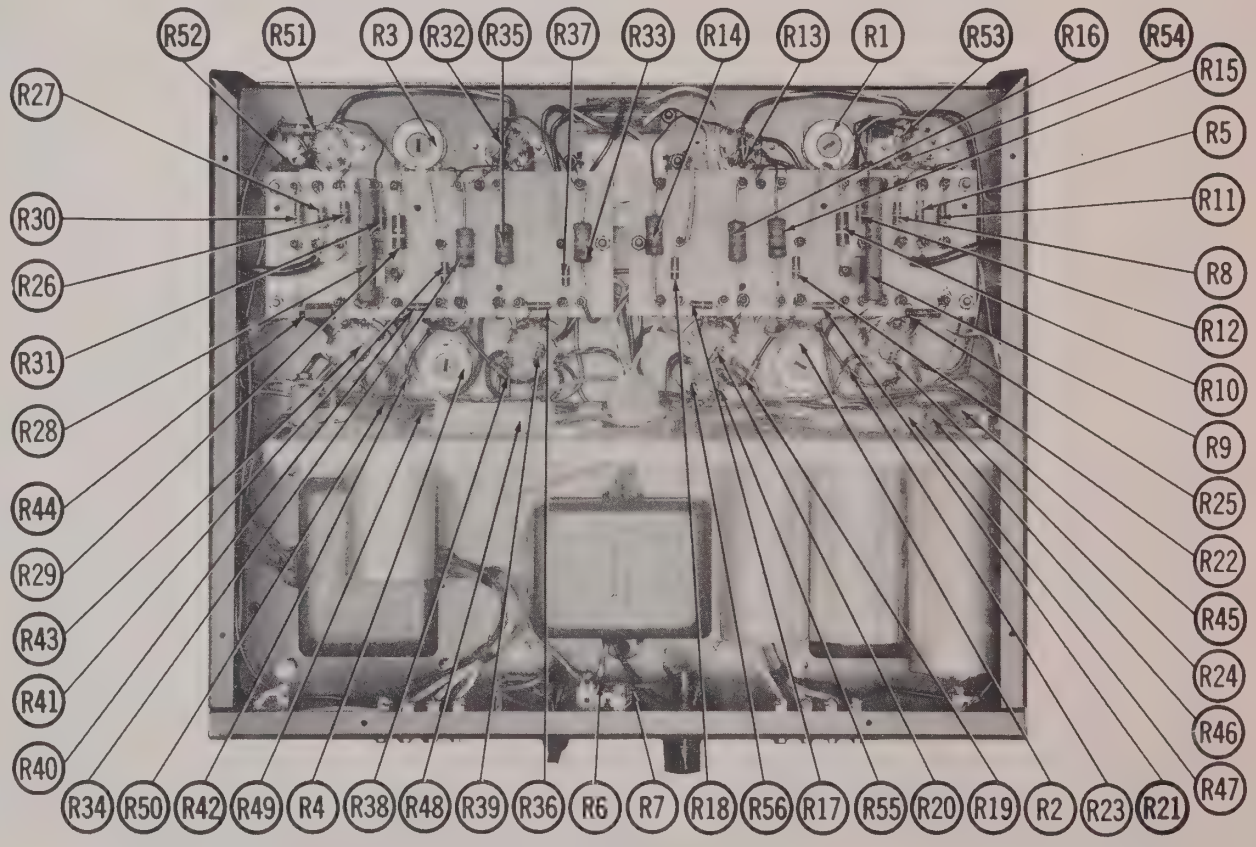
# CHASSIS—TOP VIEW






CHASSIS BOTTOM VIEW-CAPACITOR & MISC. IDENT.




CHASSIS BOTTOM VIEW-RESISTOR IDENT.

# PARTS LIST AND DESCRIPTIONS

## TUBES

| • GENERAL ELECTRIC • RAYTHEON • SYLVANIA • | | | | | |
|---|---|---|---|---|---|
| ITEM No. | USE | TYPE | ITEM No. | USE | TYPE |
| V1 | Channel A AF Amp. | 12BY7A | V5 | Channel B AF Amp. | 12BY7A |
| V2 | Channel A AF Amp. - Channel A Phase Inv. | 6CG7 | V6 | Channel B AF Amp. - Channel B Phase Inv. | 6CG7 |
| V3 | Channel A Output | 7581 | V7 | Channel B Output | 7581 |
| V4 | Channel A Output | 7581 | V8 | Channel B Output | 7581 |

## ELECTROLYTIC CAPACITORS

| ITEM No. | RATING CAP. | RATING VOLT. | REPLACEMENT DATA Harman-Kardon PART No. | AEROVOX PART No. | CORNELL-DUBILIER PART No. | GENERAL ELECTRIC PART No. | MALLORY PART No. | PYRAMID PART No. | SPRAGUE PART No. |
|---|---|---|---|---|---|---|---|---|---|
| C1 | 200 | 250 | JE3273851 | AFHS1-37-30 | XA0318 | XC1-21 | WP132 | TMD-1490 | TVL-1547 |
| C2 | 200 | 250 | JE3273851 | AFHS1-37-30 | XA0318 | XC1-21 | WP132 | TMD-1490 | TVL-1547 |
| C3A | ▲90 | 500 | JE3714399 | AFH2-73 | B0540 | | | | |
| B | ■30 | 500 | | PRS1840 | BR3050 | | | | |
| C | ▲30 | 500 | | | | | | | |
| C4A | ▲80 | 150 | JE3714397 | AFH2-20 | XB0183 | XC2-34 | FP214.5 | TMD-2155 | TVL-2442.3 |
| B | ▲80 | 150 | | | | | | | |

## FIXED CAPACITORS

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
|---|---|---|---|---|---|---|---|---|
| C5 | .47 400V | | P488N-47 | | CUB4P47 | 4DP-6-474 | GEM-4047 | 4TM-P47 |
| C6 | 430 5% | | 1469-00043 | | 5R5T43 | CM-19B-431J | | MS-343 |
| C7 | .47 400V | | P488N-47 | | CUB4P47 | 4DP-6-474 | GEM-4047 | 4TM-P47 |
| C8 | .47 600V | | P688N-47 | | CUB6P47 | 6DP-6-474 | GEM-6047 | 6TM-P47 |
| C9 | .47 600V | | P688N-47 | | CUB6P47 | 6DP-6-474 | GEM-6047 | 6TM-P47 |
| C10 | 100 5% | | 1469-0001 | TCZ-100 | 22R5T1 | CM-19B-101J | MCE235 | MS-310 |
| C11 | .47 400V | | P488N-47 | | CUB4P47 | 4DP-6-474 | GEM-4047 | 4TM-P47 |
| C12 | 430 5% | | 1469-00043 | | 5R5T43 | CM-19B-431J | | MS-343 |
| C13 | .47 400V | | P488N-47 | | CUB4P47 | 4DP-6-474 | GEM-4047 | 4TM-P47 |
| C14 | .47 600V | | P688N-47 | | CUB6P47 | 6DP-6-474 | GEM-6047 | 6TM-P47 |
| C15 | .47 600V | | P688N-47 | | CUB6P47 | 6DP-6-474 | GEM-6047 | 6TM-P47 |
| C16 | 100 5% | | 1469-0001 | TCZ-100 | 22R5T1 | CM-19B-101J | MCE235 | MS-310 |
| C17 | .01 1400V | | DAC-27 | DD16-103 | HVE16S1 | 16DP-3-103 | UAC-110 | BL-S10 |

## CONTROLS

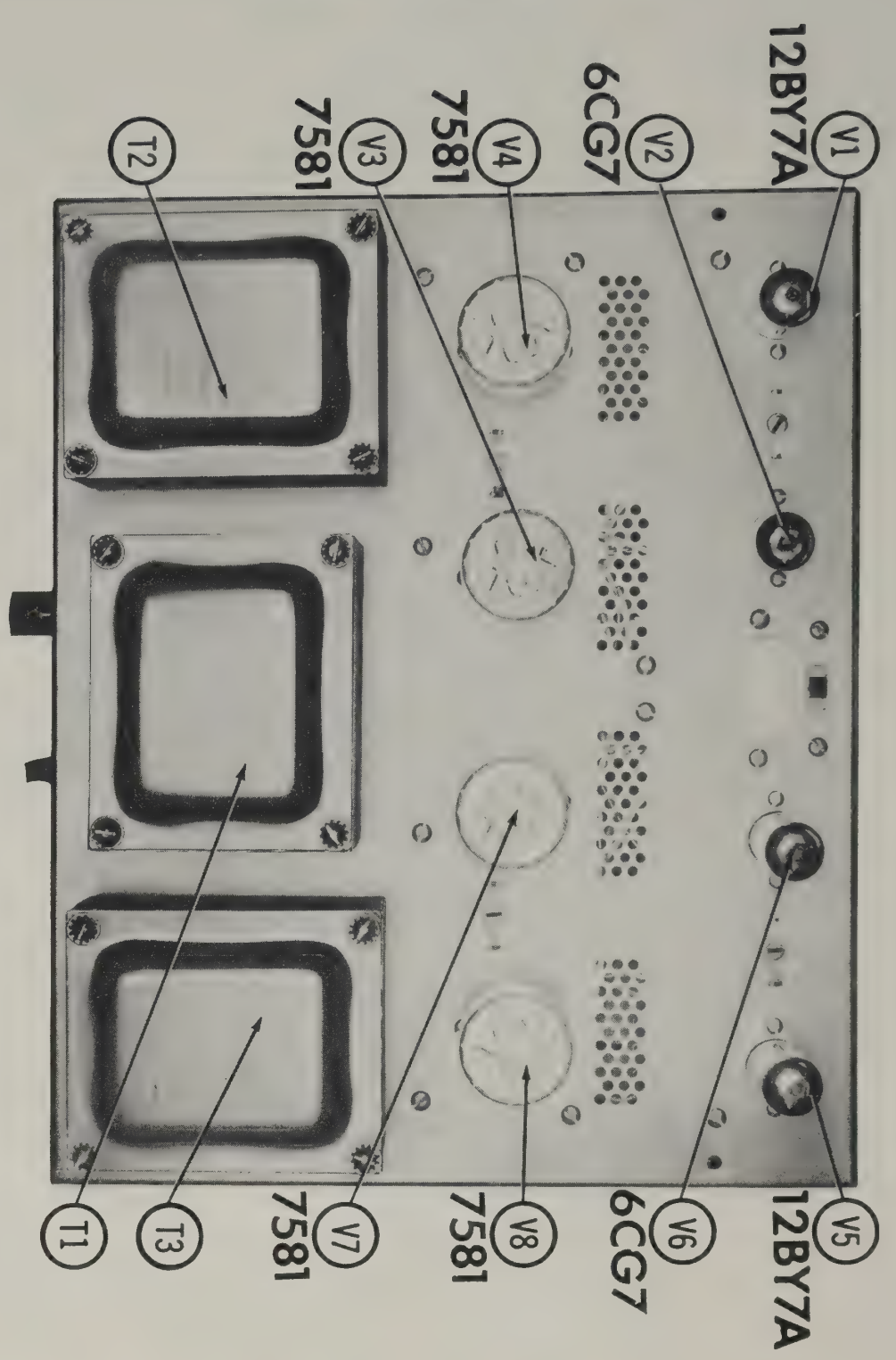
| ITEM No. | RATING RESISTANCE | RATING WATTS | REPLACEMENT DATA Harman-Kardon PART No. | CENTRALAB PART No. | CLAROSTAT PART No. | CTS-IRC PART No. | MALLORY PART No. | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| R1A | 5000Ω | ½ | RV1121910 | TT-10 | B47-5000-S | B11-114 | TA53L | AC Balance, Channel A |
| B | Shaft | | | Not Req. | Not Req. | TM4 | Not Req. | |
| R2A | 5000Ω | ½ | RV1121910 | TT-10 | B47-5000-S | B11-114 | TA53L | DC Balance, Channel A |
| B | Shaft | | | Not Req. | Not Req. | TM4 | Not Req. | |
| R3A | 5000Ω | ½ | RV1121910 | TT-10 | B47-5000-S | B11-114 | TA53L | AC Balance, Channel B |
| B | Shaft | | | Not Req. | Not Req. | TM4 | Not Req. | |
| R4A | 5000Ω | ½ | RV1121910 | TT-10 | B47-5000-S | B11-114 | TA53L | DC Balance, Channel B |
| B | Shaft | | | Not Req. | Not Req. | TM4 | Not Req. | |

## RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | RATING | REPLACEMENT DATA IRC PART No. | WORKMAN TV PART No. | REMARKS | ITEM No. | RATING | REPLACEMENT DATA IRC PART No. | WORKMAN TV PART No. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| R5 | 1meg | | | | R7 | 330Ω | | | |
| R6 | 2200Ω | | | | R8 | 10K | | | |

## CHASSIS—TOP VIEW




# PARTS LIST AND DESCRIPTIONS (Continued)

## RESISTORS (cont)

| ITEM No. | RATING | REPLACEMENT DATA IRC PART No. | WORKMAN TV PART No. | REMARKS | ITEM No. | RATING | REPLACEMENT DATA IRC PART No. | WORKMAN TV PART No. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| R9 | 44K 7W | PW7-44K | 7W-SQ-44K | | R33 | 20K 2W | | | |
| R10 | 150K 1W | | | | R34 | 20K 2W | | | |
| R11 | 470Ω | | | | R35 | 24K 2W | | | |
| R12 | 1000Ω | | | | R36 | 1000Ω | | | |
| R13 | 1meg | | | | R37 | 100K | | | |
| R14 | 20K 2W | | | | R38 | 15K | | | (10K)* Note 2 |
| R15 | 20K 2W | | | | R39 | 3.3Ω | | | |
| R16 | 24K 2W | | | | R40 | 1000Ω | | | |
| R17 | 1000Ω | | | | R41 | 100K | | | |
| R18 | 100K | | | | R42 | 15K | | | (10K)* Note 2 |
| R19 | 15K | | | (10K)* Note 1 | R43 | 3.3Ω | | | |
| R20 | 3.3Ω | | | | R44 | 10K | | | |
| R21 | 1000Ω | | | | R45 | 390Ω 1W | | | |
| R22 | 100K | | | | R46 | 180Ω 3W | PW3-180 | 3G-180 | |
| R23 | 15K | | | (10K)* Note 1 | R47 | 270Ω 10W | PW10-270 | 10W-SQ-270 | |
| R24 | 3.3Ω | | | | R48 | 5Ω 20W | PW20-5 | 20W-SQ-5Ω | Note 3 |
| R25 | 10K | | | | R49 | 4700Ω 1W | | | Note 3 |
| R26 | 10K | | | | R50 | 1500Ω 3W | PW3-1500 | 3G-1500 | |
| R27 | 1meg | | | | R51 | 1Ω 1W | | | |
| R28 | 44K 7W | PW7-44K | 7W-SQ-44K | | R52 | 1Ω 1W | | | |
| R29 | 150K 1W | | | | R53 | 1Ω 1W | | | |
| R30 | 470Ω | | | | R54 | 1Ω 1W | | | |
| R31 | 1000Ω | | | | R55 | 33Ω | | | |
| R32 | 1meg | | | | R56 | 33Ω | | | |

Note 1. R20 & R24 are matched resistors, values within 2%.
Note 2. R39 & R43 are matched resistors, values within 2%.
Note 3. Not used in some versions.
* Alternate Value.

## TRANSFORMER (POWER)

| ITEM No. | RATING PRI. | RATING SEC. 1 | RATING SEC. 2 | REPLACEMENT DATA Harman-Kardon PART No. | Merit PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| T1 | 117V@ 2.1A | 200V@ 1.2A AC | 6.3V@ 6.3A | FT3714403 | | | | | |
| | SEC. 3 | SEC. 4 | SEC. 5 | | | | | | |
| | 60V@ .020A | | | | | | | | |

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE PRI. | IMPEDANCE SEC. | REPLACEMENT DATA Harman-Kardon PART No. | Merit PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|
| T2 | 4000Ω CT | 16Ω Tap@ 8Ω, 4Ω | FT3714404 | | | | | |
| T3 | 4000Ω CT | 16Ω Tap@ 8Ω, 4Ω | FT3714404 | | | | | |

## POWER RECTIFIERS

| ITEM No. | RATING CURRENT (Measured) | REPLACEMENT DATA Harman-Kardon PART No. | RCA PART No. | SARKES TARZIAN PART No. | NOTES |
|---|---|---|---|---|---|
| M1 | .330A | ZCOM3679* | 1N1763* | F6* | * Silicon † Selenium |
| M2 | .330A | ZCOM3679* | 1N1763* | F6* | |
| M3 | .330A | ZCOM3679* | 1N1763* | F6* | |
| M4 | .330A | ZCOM3679* | 1N1763* | F6* | |
| M5 | .020A | Z3714398 † | 1N1763* | 62A † | |

## FUSES

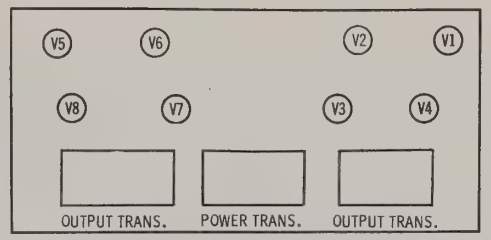
| ITEM No. | TYPE | RATING | REPLACEMENT DATA Harman-Kardon PART No. FUSE | Harman-Kardon PART No. HOLDER | LITTELFUSE PART No. FUSE | LITTELFUSE PART No. HOLDER | BUSS PART No. FUSE | BUSS PART No. HOLDER |
|---|---|---|---|---|---|---|---|---|
| M6 | 3AG | 6A 250V | ZCOM4425 | HCCOM3570 | 312006 (3AG 6A 250V) | 342001 | MTH6 | HKP |

## MISCELLANEOUS

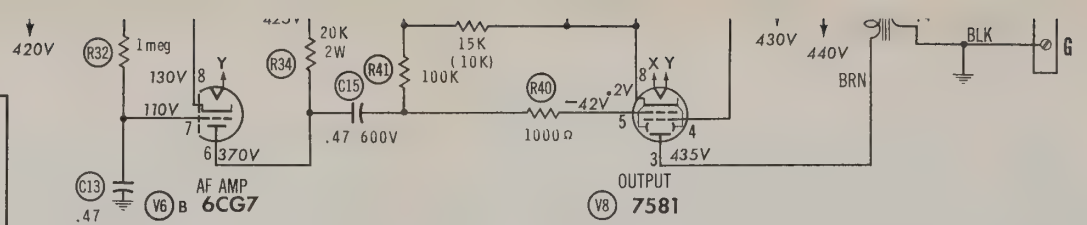
| ITEM No. | PART NAME | Harman-Kardon PART No. | NOTES |
|---|---|---|---|
| M7 | Switch | ER3714401 | Meter (DPDT Slide Type) |
| M8 | Meter | M3714400 | |

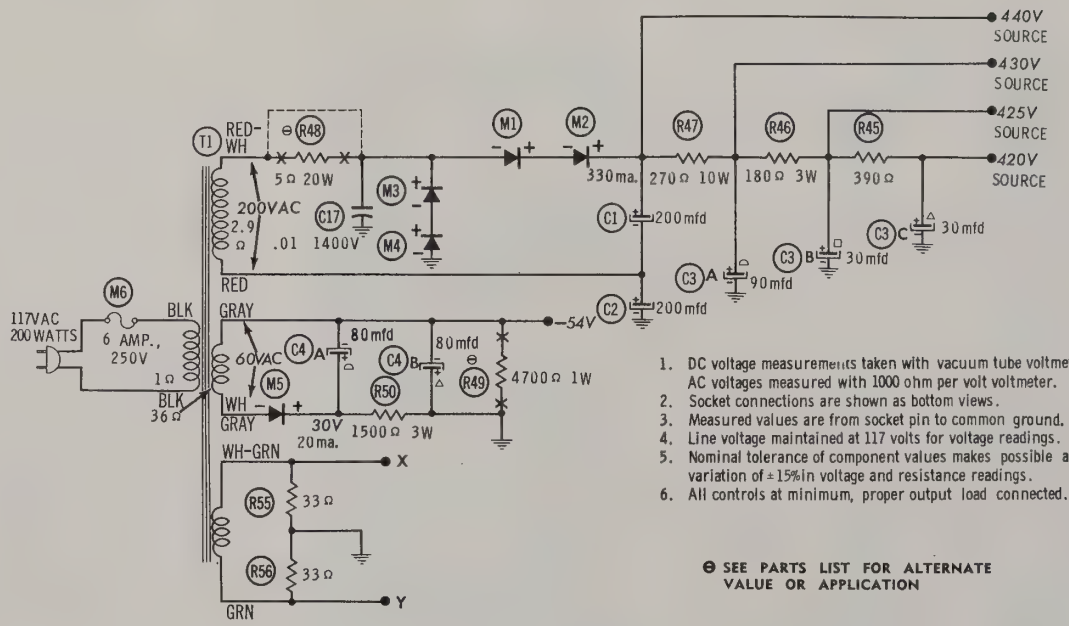
## WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)




TUBE LAYOUT ( BOTTOM VIEW)




1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

## BALANCE ADJUSTMENTS

**DC Balance**

Hold the meter selector switch in Channel A position. With no signal applied, adjust Channel A DC Balance control until the meter reads exactly at the center.

Repeat for Channel B DC balance.

**AC Balance**

Connect a 16 ohm, 20 watt resistor between terminals marked "G" and "16" on the Channel A speaker terminal strip. Using a standard phono shielded patch cord, connect the 60∿ test signal from the Test Signal jack to the Channel A input jack. To avoid overheating the resistor, prolonged testing should be avoided.

Hold the meter selector switch in Channel A position and adjust Channel A AC Balance control until meter reads exactly at the center.

Remove the phono patch cord from Channel A input and connect to Channel B input. Move the resistor to terminals "G" and "16" on the Channel B speaker terminal strip. (NOTE: The resistor will be quite hot.)

Repeat for Channel B AC balance.

RESISTANCE READINGS

| ITEM | TUBE | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 | Pin 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| V1 | 12BY7A | 470Ω | 1meg | NC | FIL | FIL | FIL | †45K | †150K | 470Ω |
| V2 | 6CG7 | †23K | †45K | 24K | FIL | FIL | †23K | †1meg | 24K | NC |
| V3 | 7581 | NC | FIL | †110Ω | †270Ω | 100K | TP | FIL | 3.3Ω | |
| V4 | 7581 | NC | FIL | †120Ω | †270Ω | 100K | TP | FIL | 3.3Ω | |
| V5 | 12BY7A | 470Ω | 1meg | NC | FIL | FIL | FIL | †45K | †150K | 470Ω |
| V6 | 6CG7 | †23K | †45K | 24K | FIL | FIL | †23K | †1meg | 24K | NC |
| V7 | 7581 | NC | FIL | †110Ω | †270Ω | 100K | TP | FIL | 3.3Ω | |
| V8 | 7581 | NC | FIL | †120Ω | †270Ω | 100K | TP | FIL | 3.3Ω | |

* 5VAC MEASURED ACROSS FILS.
† MEASURED FROM OUTPUT OF M2.

NC NO CONNECTION TP TIE POINT

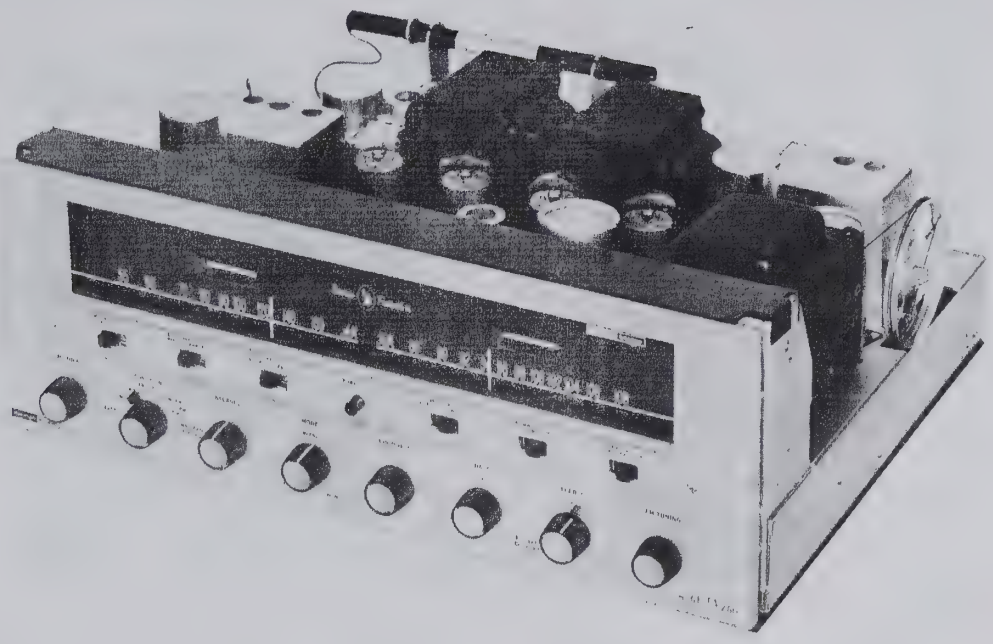
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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**HARMAN-KARDON**
**MODEL CITATION V**

PHOTOFACT® Folder

# HARMAN-KARDON MODEL TA-260 (Stereo Festival II)

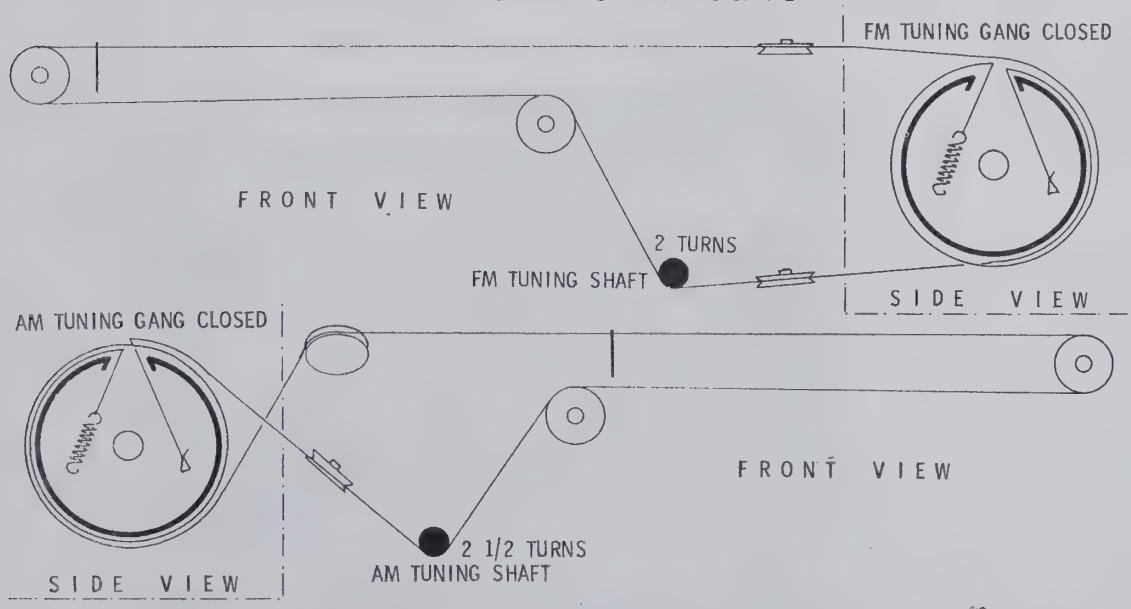
HARMAN-KARDON MODEL
TA-260 (Stereo Festival II)



HARMAN-KARDON MODEL
TA-260 (Stereo Festival II)

| | | | |
|---|---|---|---|
| TRADE NAME | Harman-Kardon Model TA260 (Stereo Festival II) | | |
| MANUFACTURER | Harman-Kardon, Inc., 520 Main Street, Westbury, L.I., N. Y. | | |
| TYPE SET | AC Operated 20 Tube FM-AM Receiver With Stereo Amplifier | | |
| POWER SUPPLY | 105 - 125 Volts AC, 60 Cycles | RATING | 180 Watts, 1.8 Amp. @117 Volts AC |
| TUNING RANGE—BROADCAST | 530 — 1640KC | FREQ. MOD. | 88 — 108MC |

## DIAL CORD STRINGING



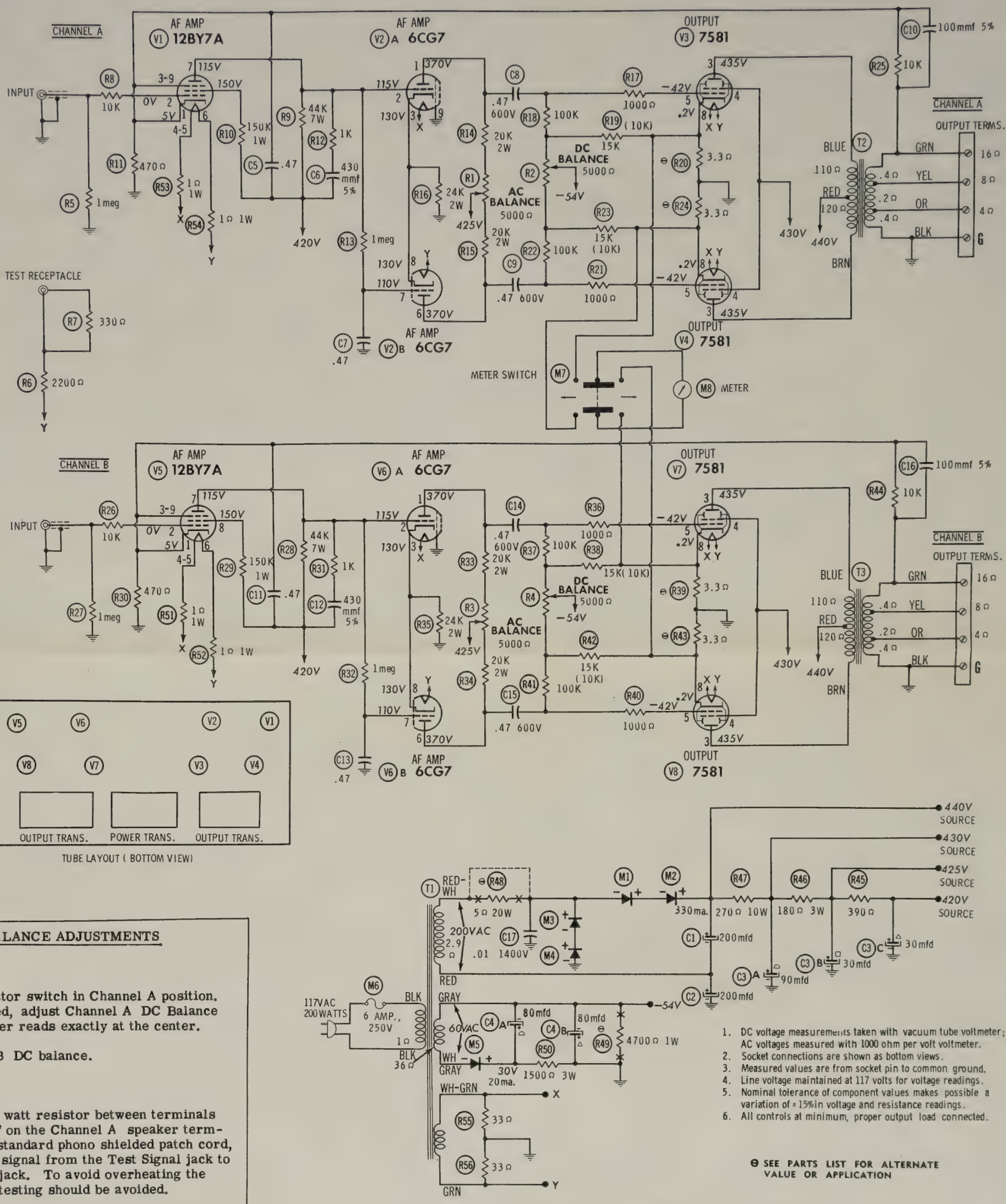

**HOWARD W. SAMS & CO., INC.** Indianapolis 6, Indiana

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KK654



SET 548 FOLDER 7




TUBE LAYOUT ( BOTTOM VIEW)




1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

## BALANCE ADJUSTMENTS

**DC Balance**

Hold the meter selector switch in Channel A position. With no signal applied, adjust Channel A DC Balance control until the meter reads exactly at the center.

Repeat for Channel B DC balance.

**AC Balance**

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Hold the meter selector switch in Channel A position and adjust Channel A AC Balance control until meter reads exactly at the center.

Remove the phono patch cord from Channel A input and connect to Channel B input. Move the resistor to terminals "G" and "16" on the Channel B speaker terminal strip. (NOTE: The resistor will be quite hot.)

Repeat for Channel B AC balance.

RESISTANCE READINGS

| ITEM | TUBE | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 | Pin 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| V1 | 12BY7A | 470Ω | 1meg | NC | FIL | FIL | FIL | †45K | †150K | 470Ω |
| V2 | 6CG7 | †23K | †45K | 24K | FIL | FIL | †23K | †1meg | 24K | NC |
| V3 | 7581 | NC | FIL | †110Ω | †270Ω | 100K | TP | FIL | 3.3Ω | |
| V4 | 7581 | NC | FIL | †120Ω | †270Ω | 100K | TP | FIL | 3.3Ω | |
| V5 | 12BY7A | 470Ω | 1meg | NC | FIL | FIL | FIL | †45K | †150K | 470Ω |
| V6 | 6CG7 | †23K | †45K | 24K | FIL | FIL | †23K | †1meg | 24K | NC |
| V7 | 7581 | NC | FIL | †110Ω | †270Ω | 100K | TP | FIL | 3.3Ω | |
| V8 | 7581 | NC | FIL | †120Ω | †270Ω | 100K | TP | FIL | 3.3Ω | |

* 5VAC MEASURED ACROSS FILS.
† MEASURED FROM OUTPUT OF M2. NC NO CONNECTION TP TIE POINT

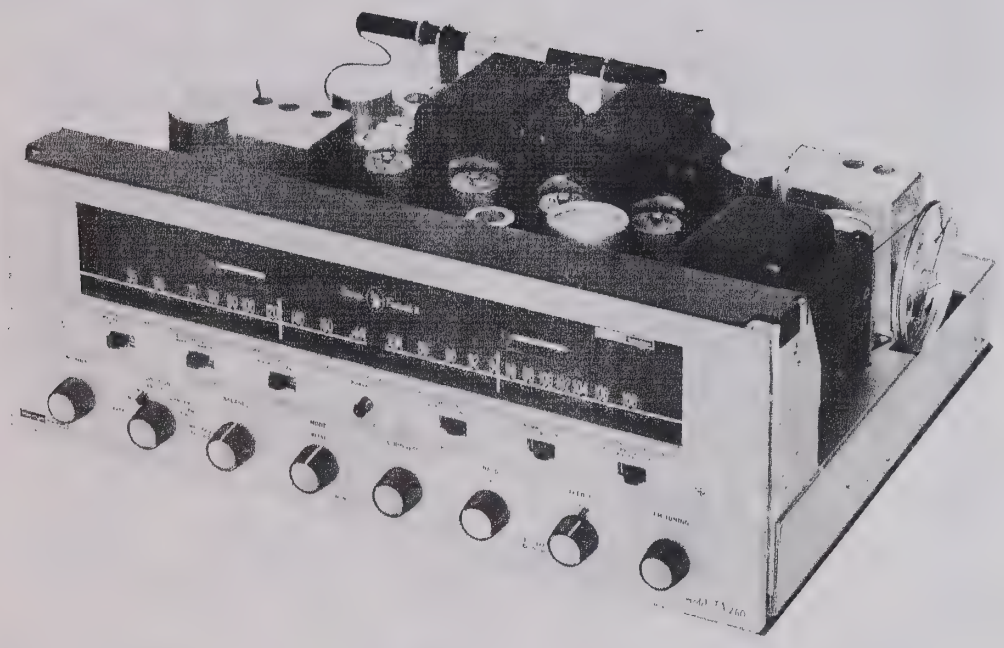
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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**HARMAN-KARDON**
**MODEL CITATION V**

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# HARMAN-KARDON MODEL TA-260 (Stereo Festival II)

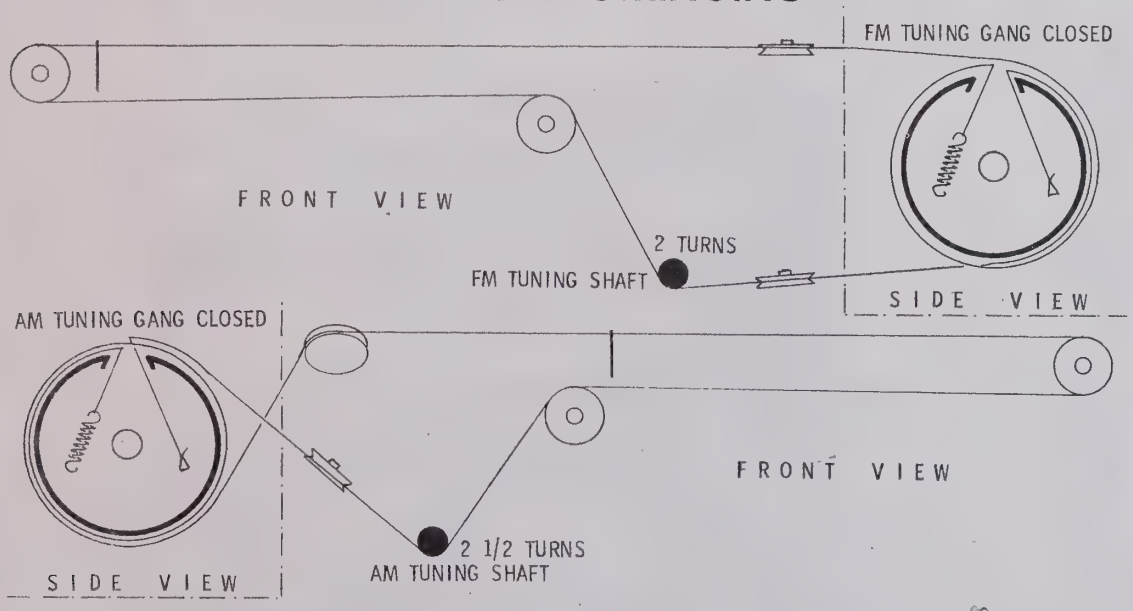
HARMAN-KARDON MODEL
TA-260 (Stereo Festival II)



HARMAN-KARDON MODEL
TA-260 (Stereo Festival II)

| | | | |
|---|---|---|---|
| TRADE NAME | Harman-Kardon Model TA260 (Stereo Festival II) | | |
| MANUFACTURER | Harman-Kardon, Inc., 520 Main Street, Westbury, L. I., N. Y. | | |
| TYPE SET | AC Operated 20 Tube FM-AM Receiver With Stereo Amplifier | | |
| POWER SUPPLY | 105 - 125 Volts AC, 60 Cycles | RATING | 180 Watts, 1.8 Amp. @117 Volts AC |
| TUNING RANGE—BROADCAST | 530 — 1640KC | FREQ. MOD. | 88 — 108MC |

## DIAL CORD STRINGING



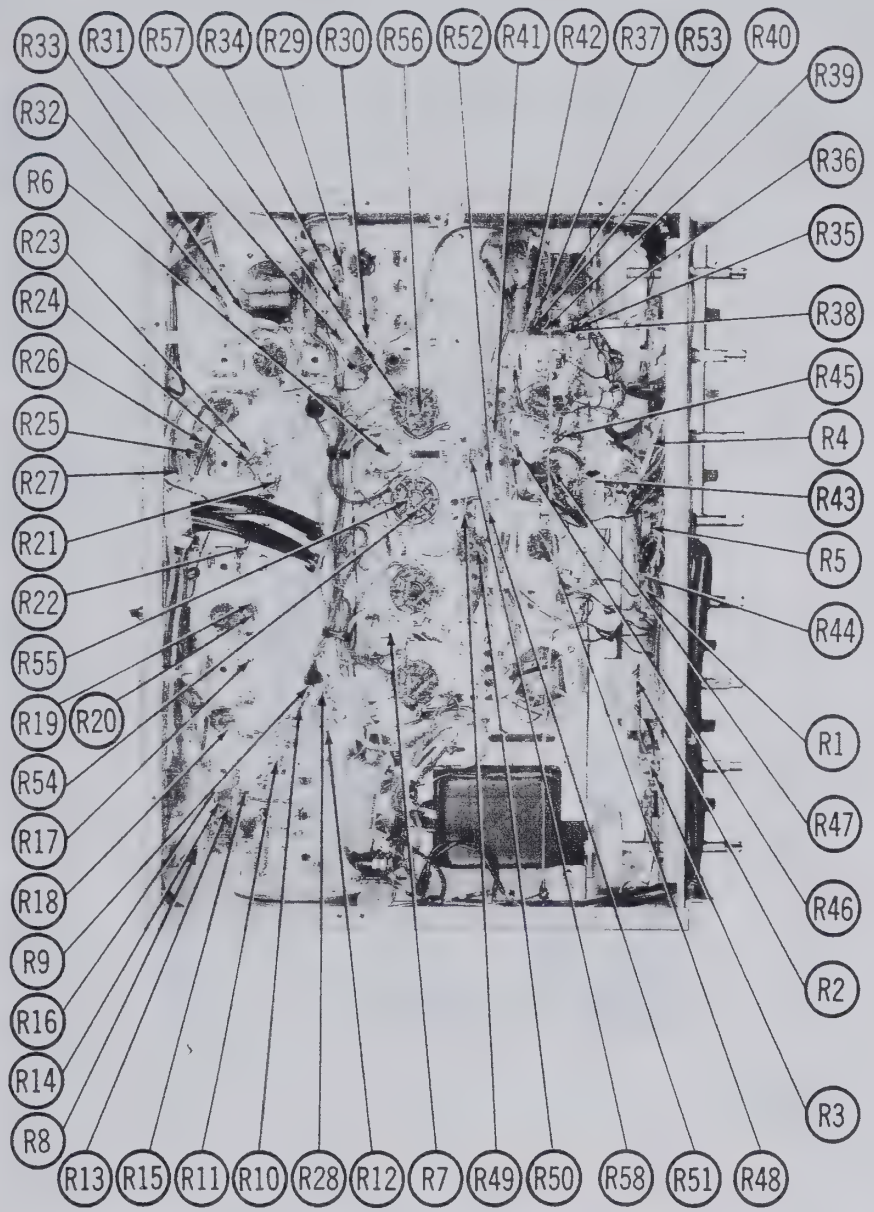

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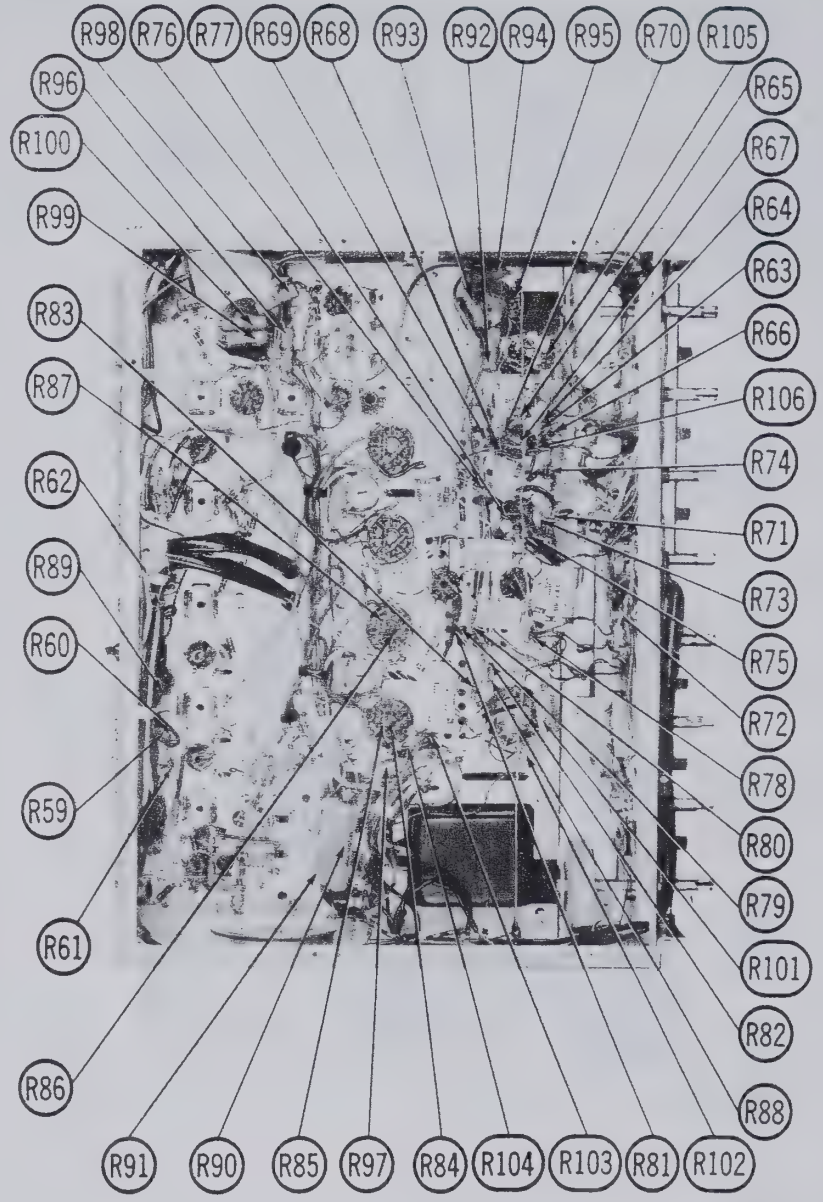
KK654



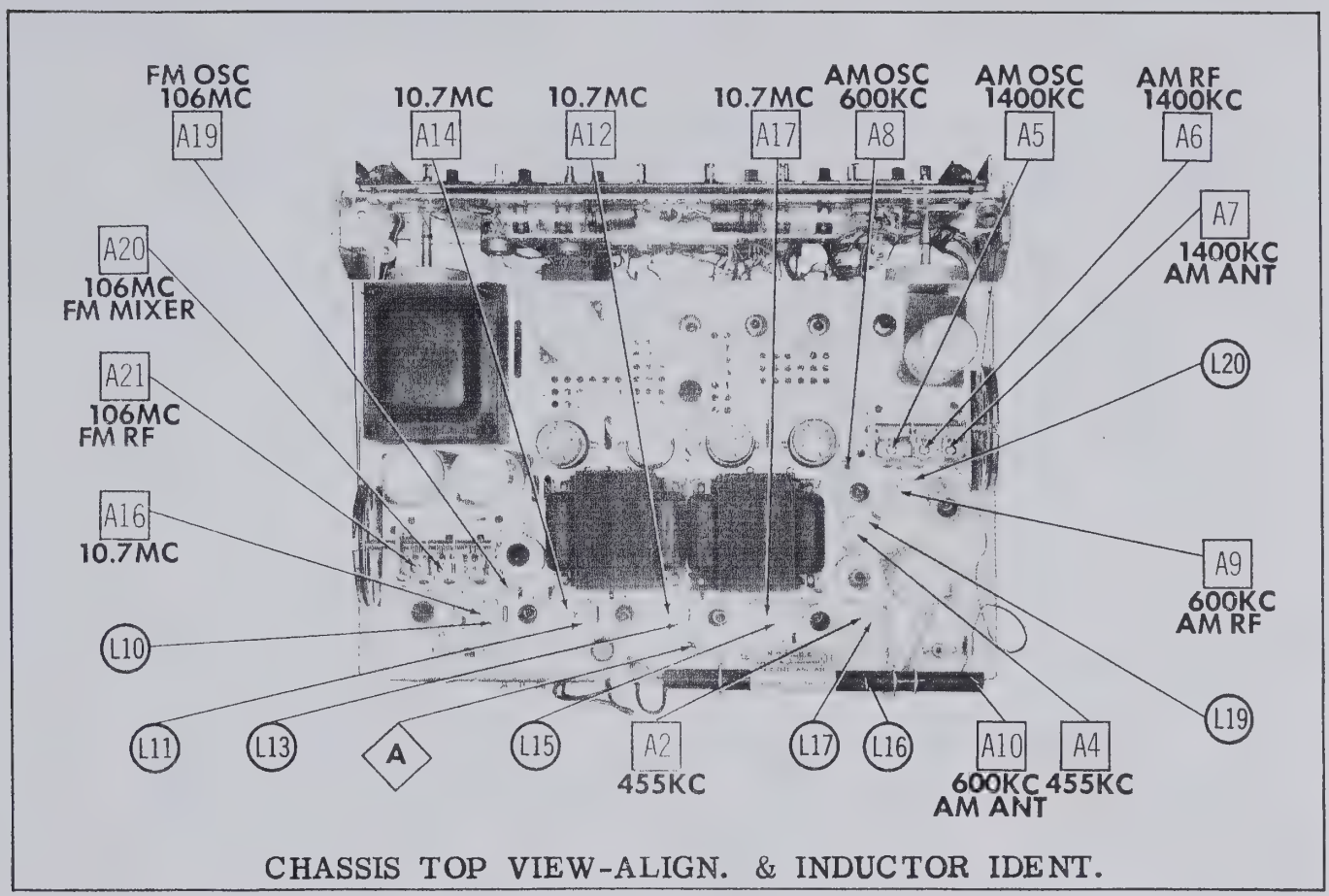
SET 548 FOLDER 7



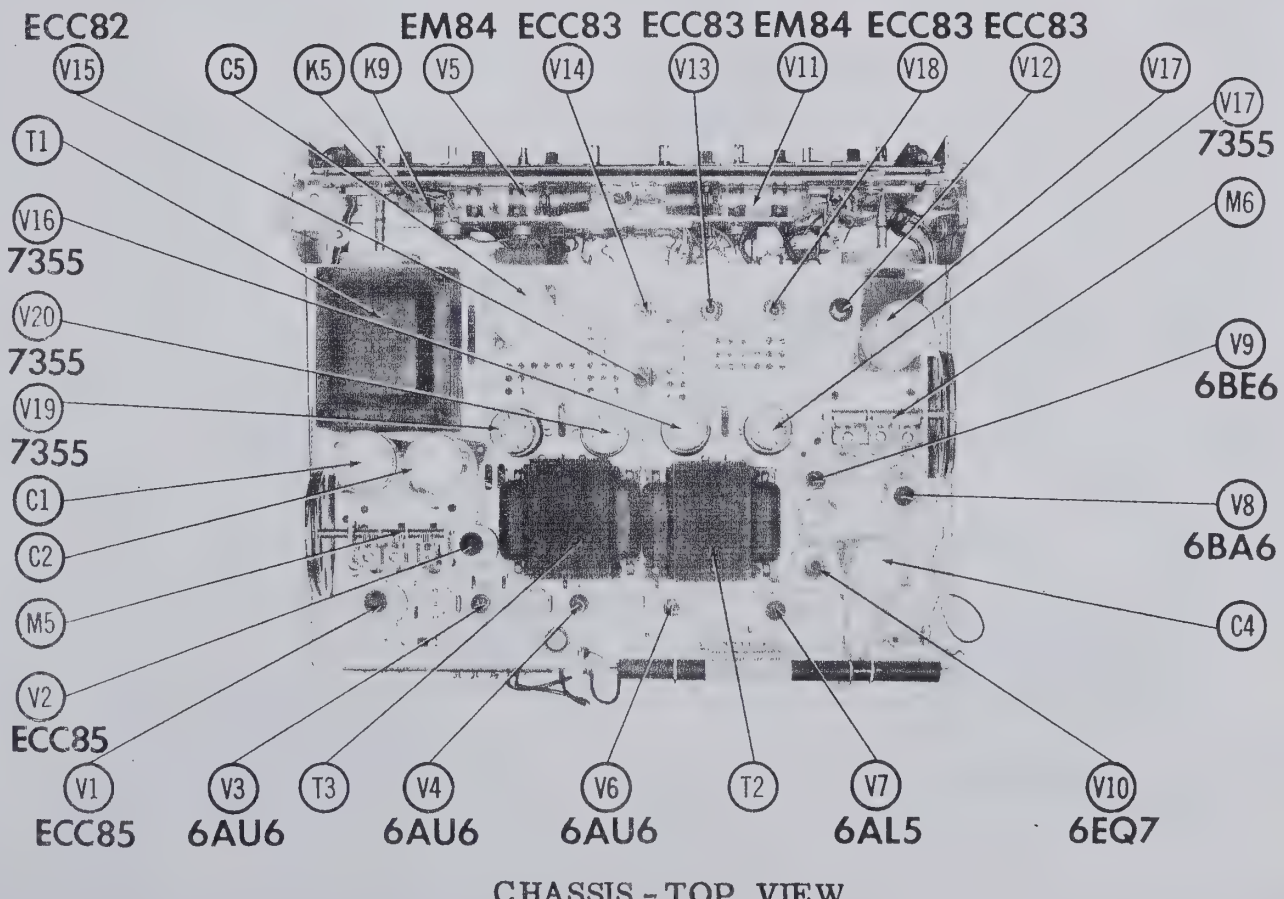

CHASSIS BOTTOM VIEW-RESISTOR IDENT.
(R1 THRU R58)



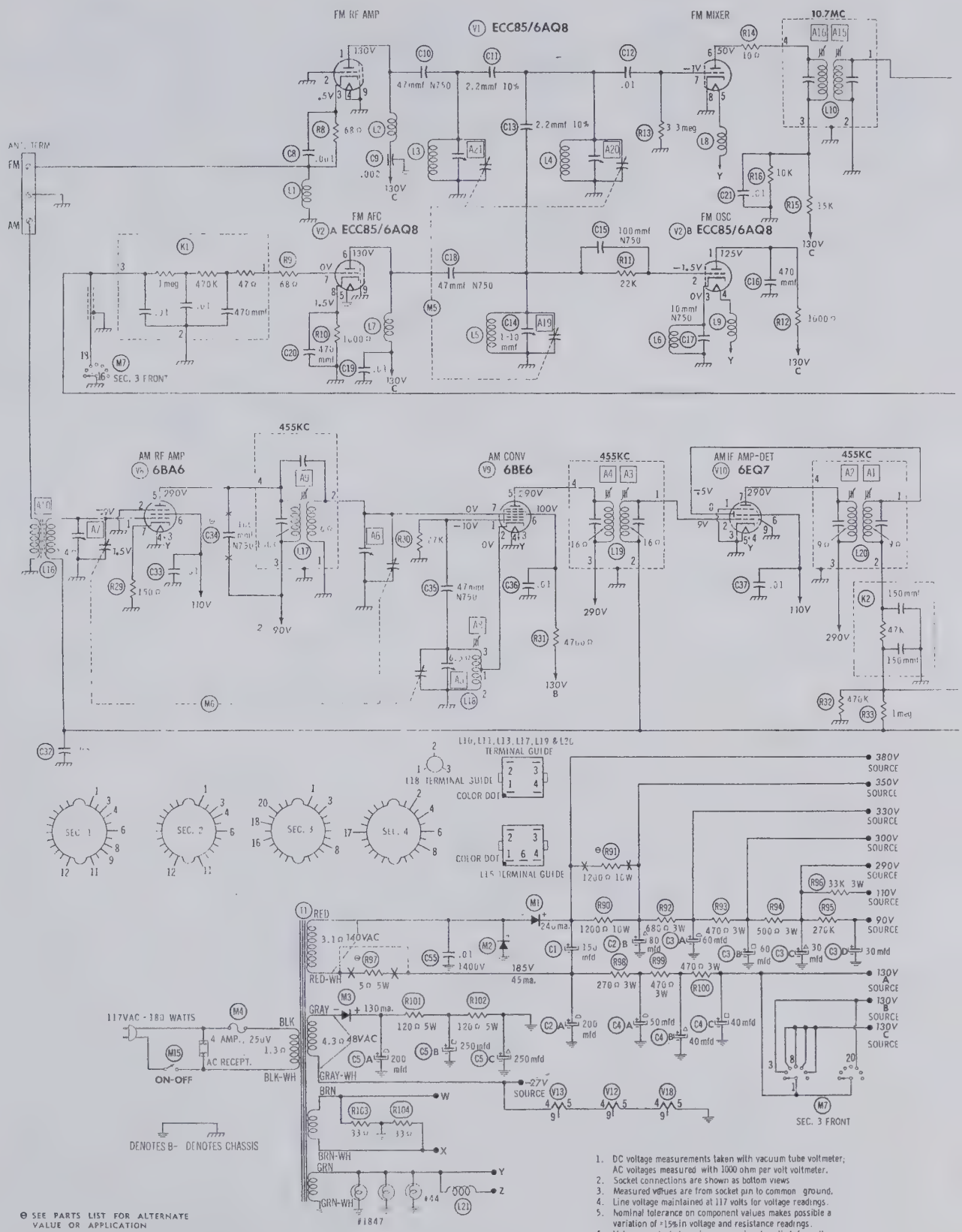

CHASSIS BOTTOM VIEW-RESISTOR IDENT.
(R59 THRU R106)




CHASSIS TOP VIEW-ALIGN. & INDUCTOR IDENT.




CHASSIS - TOP VIEW




1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

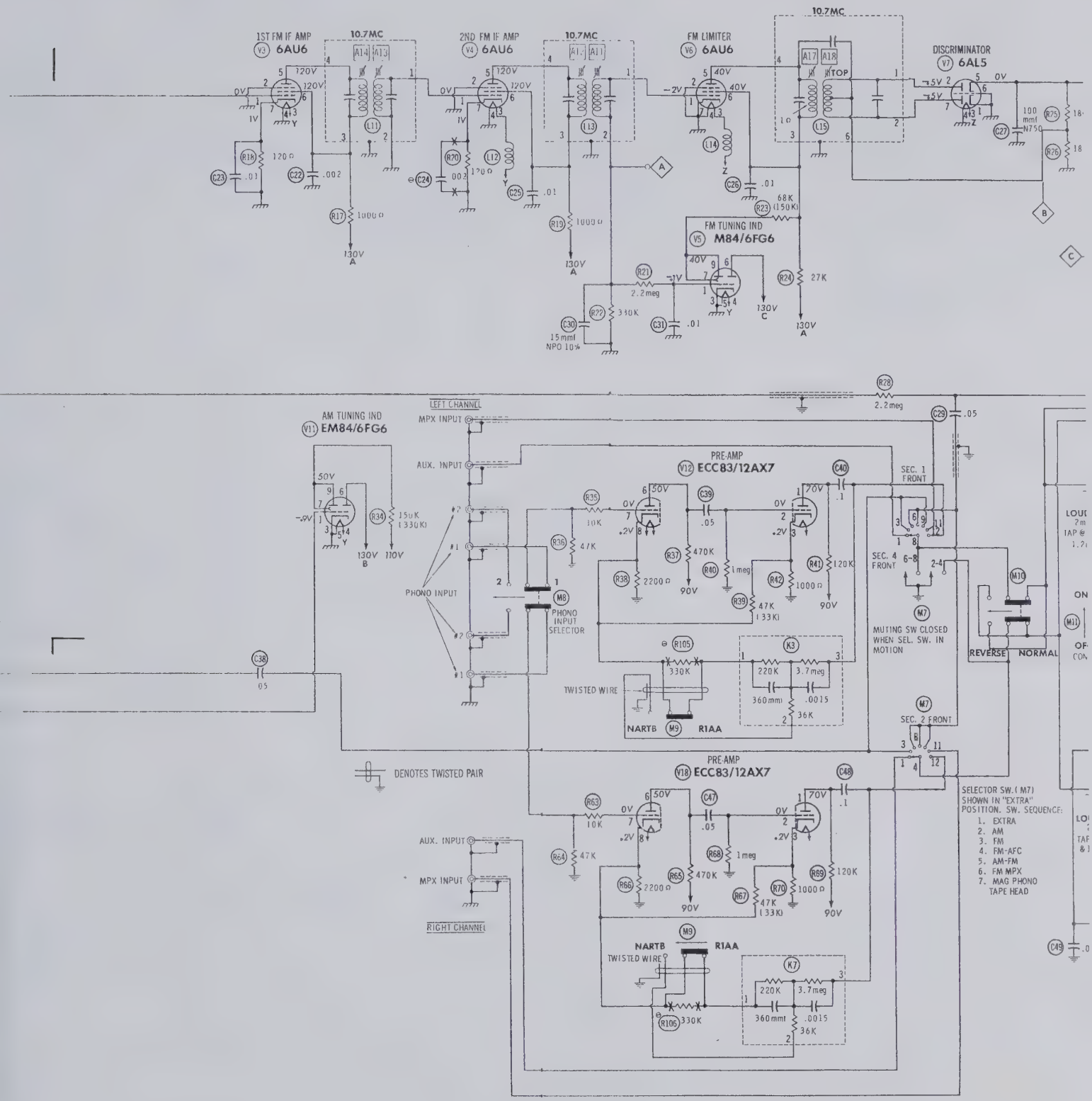
Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

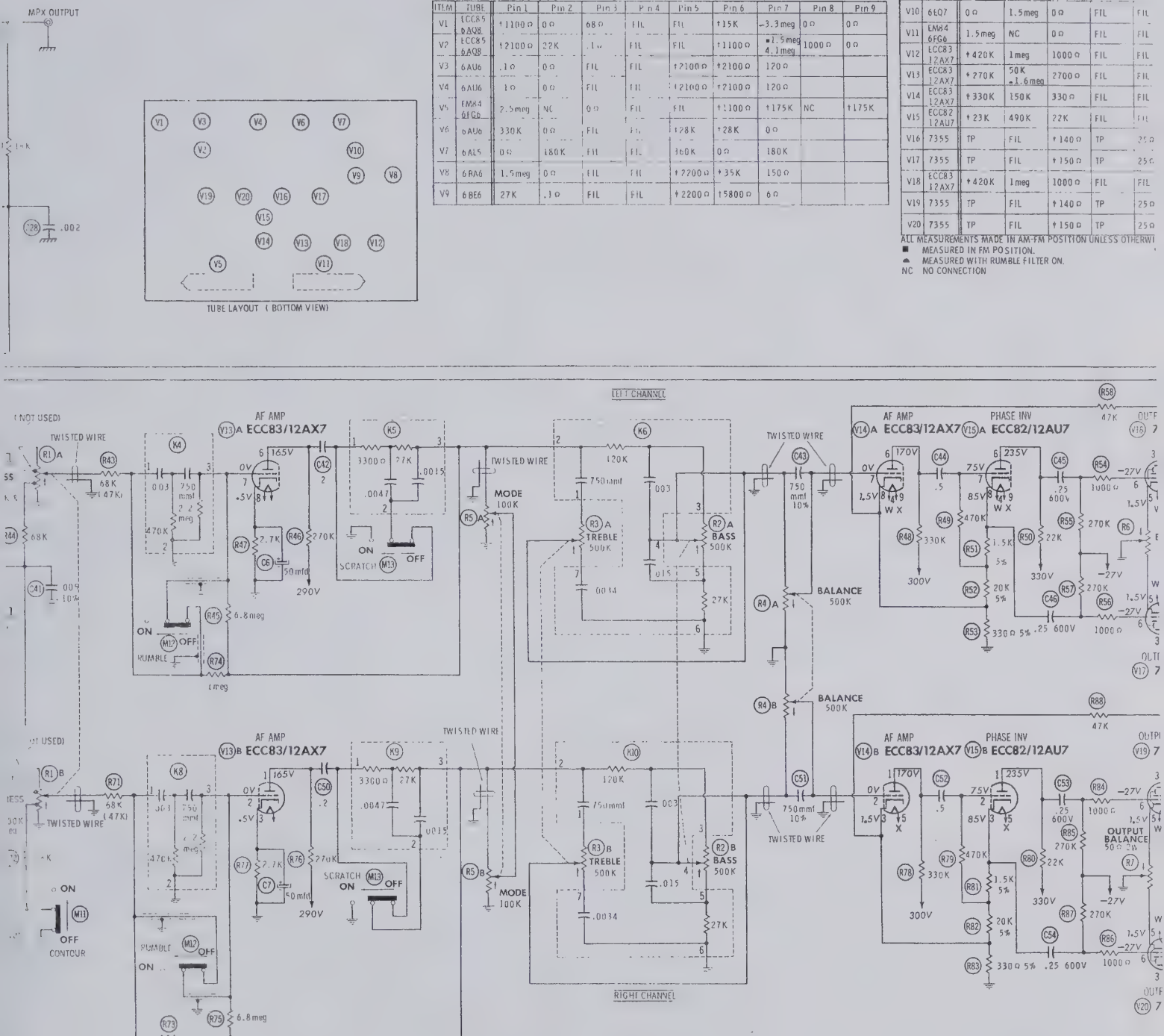
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

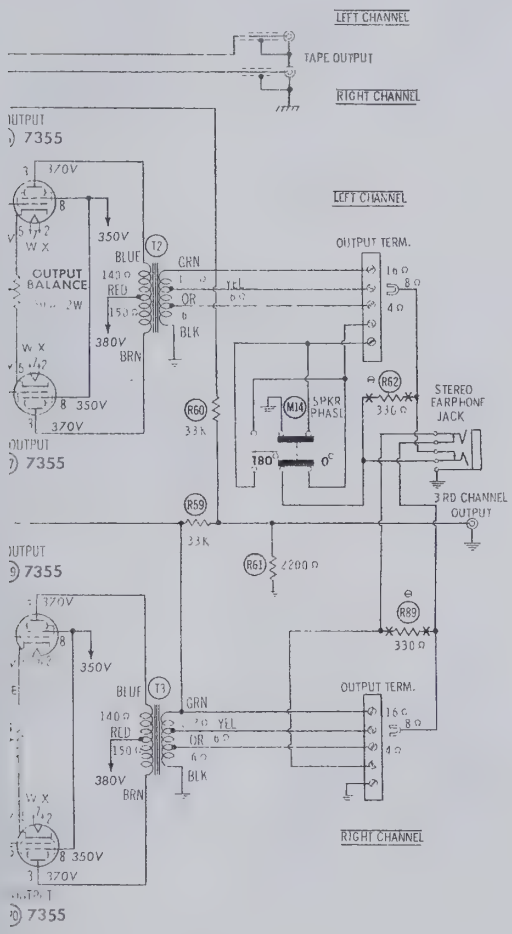
A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1961


1ST FM IF AMP
V3 6AU6
10.7MC
2ND FM IF AMP
V4 6AU6
10.7MC
FM LIMITER
V6 6AU6
10.7MC
DISCRIMINATOR
V7 6AL5
FM TUNING IND
V5 M84/6FG6
AM TUNING IND
V11 EM84/6FG6
LEFT CHANNEL
MPX INPUT
AUX. INPUT
PHONO INPUT
PHONO INPUT SELECTOR
PRE-AMP
V12 ECC83/12AX7
PRE-AMP
V18 ECC83/12AX7
TWISTED WIRE
NARTB
RIAA
DENOTES TWISTED PAIR
RIGHT CHANNEL
SEC. 1 FRONT
SEC. 4 FRONT
SEC. 2 FRONT
MUTING SW CLOSED WHEN SEL. SW. IN MOTION
REVERSE
NORMAL
SELECTOR SW. ( M7 ) SHOWN IN "EXTRA" POSITION. SW. SEQUENCE:
1. EXTRA
2. AM
3. FM
4. FM-AFC
5. AM-FM
6. FM MPX
7. MAG PHONO TAPE HEAD


MPX OUTPUT
.002
TUBE LAYOUT ( BOTTOM VIEW)
V1
V3
V4
V6
V7
V2
V10
V9
V8
V19
V20
V16
V17
V15
V14
V13
V18
V12
V5
V11
RESISTANCE READINGS
ITEM | TUBE | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 | Pin 9
V1 | ECC85 6AQ8 | †1100Ω | 0Ω | 68Ω | FIL | FIL | †15K | -3.3meg | 0Ω | 0Ω
V2 | ECC85 6AQ8 | †2100Ω | 22K | .1Ω | FIL | FIL | †1100Ω | ▪1.5meg 4.1meg | 1000Ω | 0Ω
V3 | 6AU6 | .1Ω | 0Ω | FIL | FIL | †2100Ω | †2100Ω | 120Ω
V4 | 6AU6 | 1Ω | 0Ω | FIL | FIL | †2100Ω | †2100Ω | 120Ω
V5 | EM84 6FG6 | 2.5meg | NC | 0Ω | FIL | FIL | †1100Ω | †175K | NC | †175K
V6 | 6AU6 | 330K | 0Ω | FIL | FIL | †28K | †28K | 0Ω
V7 | 6AL5 | 0Ω | 180K | FIL | FIL | 360K | 0Ω | 180K
V8 | 6BA6 | 1.5meg | 0Ω | FIL | FIL | †2200Ω | †35K | 150Ω
V9 | 6BE6 | 27K | .1Ω | FIL | FIL | †2200Ω | †5800Ω | 6Ω
V10 | 6EQ7 | 0Ω | 1.5meg | 0Ω | FIL | FIL
V11 | EM84 6FG6 | 1.5meg | NC | 0Ω | FIL | FIL
V12 | ECC83 12AX7 | †420K | 1meg | 1000Ω | FIL | FIL
V13 | ECC83 12AX7 | †270K | 50K -1.6meg | 2700Ω | FIL | FIL
V14 | ECC83 12AX7 | †330K | 150K | 330Ω | FIL | FIL
V15 | ECC82 12AU7 | †23K | 490K | 22K | FIL | FIL
V16 | 7355 | TP | FIL | †140Ω | TP | 25Ω
V17 | 7355 | TP | FIL | †150Ω | TP | 25Ω
V18 | ECC83 12AX7 | †420K | 1meg | 1000Ω | FIL | FIL
V19 | 7355 | TP | FIL | †140Ω | TP | 25Ω
V20 | 7355 | TP | FIL | †150Ω | TP | 25Ω
ALL MEASUREMENTS MADE IN AM-FM POSITION UNLESS OTHERWI
■ MEASURED IN FM POSITION.
▲ MEASURED WITH RUMBLE FILTER ON.
NC NO CONNECTION
LEFT CHANNEL
RIGHT CHANNEL
AF AMP V13A ECC83/12AX7
AF AMP V13B ECC83/12AX7
AF AMP V14A ECC83/12AX7
PHASE INV V15A ECC82/12AU7
AF AMP V14B ECC83/12AX7
PHASE INV V15B ECC82/12AU7
TWISTED WIRE
MODE 100K
BALANCE 500K
TREBLE 500K
BASS 500K
SCRATCH
RUMBLE
CONTOUR
ON
OFF
OUTPUT BALANCE 50Ω 2W
290V
300V
330V
-27V

| | | | | |
|---|---|---|---|---|
| IL | †35K | †2200Ω | 520K | 0Ω |
| IL | †1100Ω | †185Ω | NC | †185K |
| IL | †770K | 57K | 2200Ω | NC |
| IL | †270K | 50K<br>•1.6meg | 2700Ω | NC |
| IL | †330K | 150K | 330Ω | FIL |
| IL | †73K | 490K | 22K | FIL |
| | 270K | FIL | †600Ω | |
| 5Ω | 270K | FIL | †600Ω | |
| IL | †770K | 57K | 2200Ω | NC |
| 5Ω | 270K | FIL | †600Ω | |
| 5Ω | 270K | FIL | †600Ω | |

RWISE DESIGNATED.
† MEASURED FROM OUTPUT OF M1
• MEASURED FROM JUNCTION OF R9R & C2A.
TP TIE POINT




**HARMAN-KARDON MODEL**
**TA-260 (Stereo Festival II)**

# ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Loudness control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:

| | |
|---|---|
| A1 thru A4, A9, A11 thru A18 | GENERAL CEMENT #5097, 8727<br>WALSCO #2515 |
| A5, A6, A7, A19, A20, A21 | GENERAL CEMENT #5004, 5008, 5009<br>WALSCO #2520 |
| A8 | GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440<br>WALSCO #2526, 2543, 2544, 2545 |

AM ALIGNMENT — SELECTOR IN AM POSITION

| SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|
| High side thru .1mfd to pin 7 (grid) of AM Converter. Low side to chassis. | 455KC (400~ 30% AM) | (AM) Tuning gang fully open. | Across voice coil. | A1, A2, A3, A4 | Adjust for maximum output. |
| High side thru 470Ω to AM antenna terminal. Low side to chassis. | 1400KC | 1400KC | " | A5, A6, A7 | " |
| " | 600KC | 600KC | " | A8, A9, A10 | Adjust for maximum output. A10 is adjusted by sliding ring along loopstick. (Recement A10). |

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM — SELECTOR IN FM POSITION

| SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|
| High side thru .01mfd to pin 7 (grid) of FM Mixer. Low side to chassis. | 10.7MC (Unmod.) | (FM) Point of non-interference. | DC probe to point Ⓐ. Common to chassis. | A11, A12, A13, A14, A15, A16 | Adjust for maximum deflection. |
| " | " | " | DC probe thru 1meg to point Ⓑ. Common to chassis. | A17 | " |
| " | " | " | DC probe to point Ⓒ. Common to chassis. | A18 | Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. |

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

| SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|
| High side thru .01mfd to pin 7 (grid) of FM Mixer. Low side to chassis. | 10.7MC (450KC Swp) | (FM) Point of non-interference. | Vert. amp. to point Ⓐ. Low side to chassis. | A11, A12, A13, A14, A15, A16 | Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. |
| " | " | " | Vert. amp. thru 47K to point Ⓑ. Low side to chassis. | A17 | " |
| " | " | " | Vert. amp. to point Ⓒ. Low side to chassis. | A18 | Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A17 for maximum amplitude and straightness of cross-over lines. |

FM RF ALIGNMENT — SELECTOR IN FM POSITION

| SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|
| Across FM antenna terminals with 150Ω in each lead. | 106MC (Unmod.) | (FM) 106MC | DC probe to point Ⓐ. Common to chassis. | A19, A20, A21 | Adjust for maximum deflection. |
| " | 90MC | 90MC | " | L5, L4, L3 | Adjust for maximum deflection by expanding or compressing coil turns. |

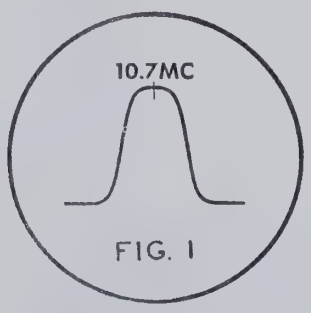


FIG. 1

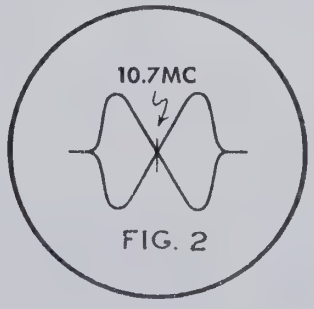
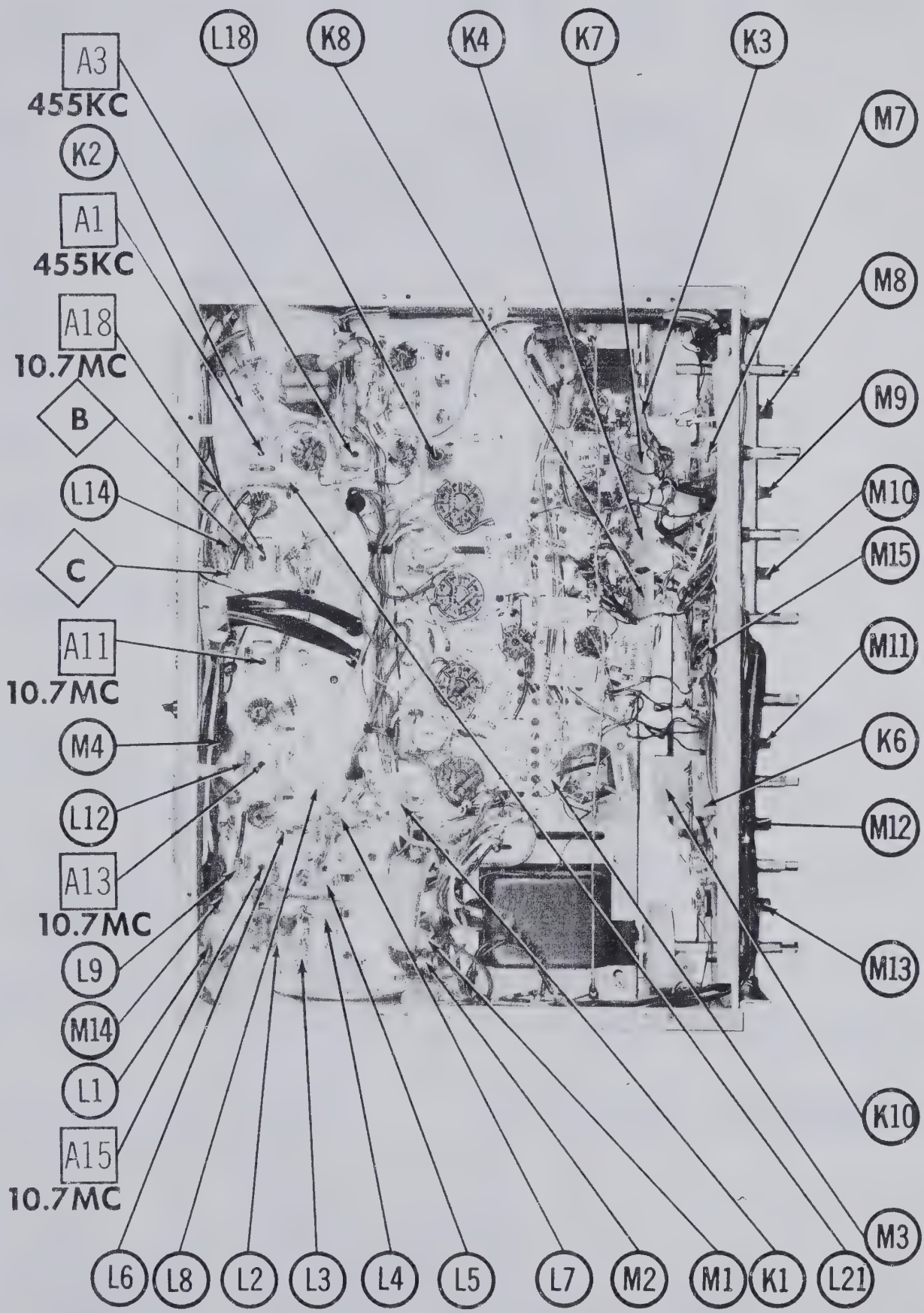


FIG. 2




CHASSIS BOTTOM VIEW-ALIGN., INDUCTOR & MISC. IDENT.

# PARTS LIST AND DESCRIPTIONS

## TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

| ITEM No. | USE | TYPE |
|---|---|---|
| V1 | FM RF Amp. -FM Mixer | ECC85/6AQ8 |
| V2 | FM Osc. -FM AFC | ECC85/6AQ8 |
| V3 | 1st FM IF Amplifier | 6AU6 |
| V4 | 2nd FM IF Amplifier | 6AU6 |
| V5 | FM Tuning Indicator | EM84/6FG6 |
| V6 | FM Limiter | 6AU6 |
| V7 | Discriminator | 6AL5 |
| V8 | AM RF Amplifier | 6BA6 |
| V9 | AM Converter | 6BE6 |
| V10 | AM IF Amp. -AM Det. | 6EQ7 |
| V11 | AM Tuning Indicator | EM84/6FG6 |
| V12 | Left Channel Preamp. | ECC83/12AX7 |
| V13 | Left Channel AF Amp. - Right Channel AF Amp. | ECC83/12AX7 |
| V14 | Left Channel AF Amp. - Right Channel AF Amp. | ECC83/12AX7 |
| V15 | Left Channel Phase Inv. - Right Channel Phase Inv. | ECC82/12AU7 |
| V16 | Left Channel Output | 7355 |
| V17 | Left Channel Output | 7355 |
| V18 | Right Channel Preamp. | ECC83/12AX7 |
| V19 | Right Channel Output | 7355 |
| V20 | Right Channel Output | 7355 |

## ELECTROLYTIC CAPACITORS

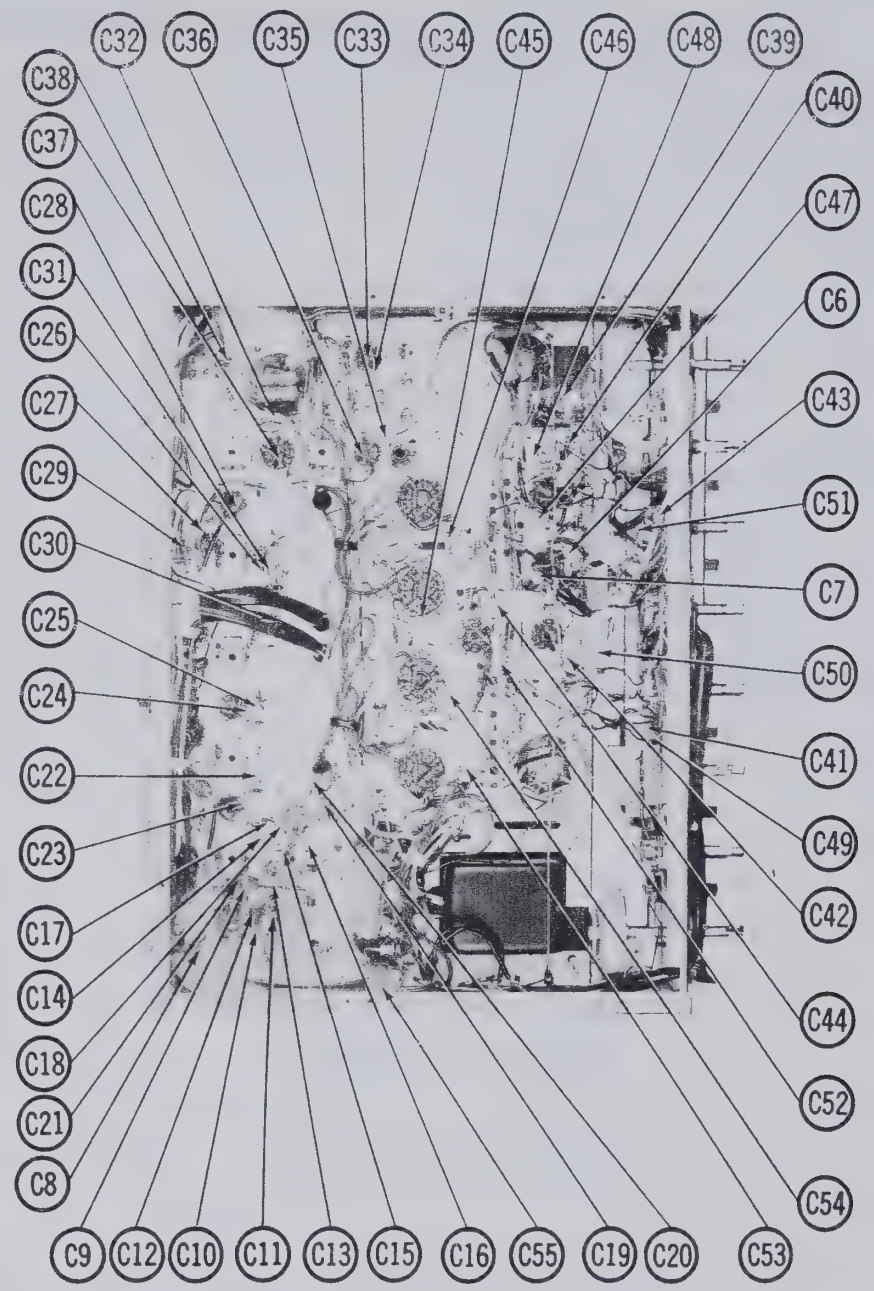
| ITEM No. | RATING CAP. | RATING VOLT. | REPLACEMENT DATA Harman-Kardon PART No. | AEROVOX PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | PYRAMID PART No. | SPRAGUE PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| C1 | 150 | 200 | JE3584176 | AFH1-31-75 | XA0266 | FP140.6 | TMS-1480 | TVL-1540 | |
| C2A | ▲200 | 200 | JE3584177 | AFH3-114-80 | XA0318 | WP132 | TMS-1490 | TVL-1547 | |
| B | ▲80 | 350 | | | BR8035 | TC80 | TD-80-350 | TVA-1716 | |
| C3A | ▲60 | 350 | JE3584178 | | C0232 | FP333.7 | TMT-3489 | TVL-3791 | |
| B | ■60 | 350 | | | BR6035 | TC795 | TD-60-350 | TVA-1613 | |
| C | ▲30 | 300 | | | | | | | |
| D | 30 | 300 | | | | | | | |
| C4A | ▲50 | 200 | JE2502988 | AFH3-25-50 | C0194 | FP327.89 | TMT-3304 | TVL-3583 | |
| B | ▲40 | 200 | | | | | | | |
| C | ■40 | 200 | | | | | | | |
| C5A | ▲200 | 100 | JE3584179 | | XB0189 | | TMD-2185 | TVLS-3402* | |
| B | ■250 | 50 | | | BR2505 | | TD-250-50 | | |
| C | ▲250 | 50 | | | | | | | |
| C6 | 50 | 6 | JE3584255 | PTT29 | NLW50-6 | TT6X50 | MLV50-6 | TE-1100 | * |
| C7 | 50 | 6 | JE3584255 | PTT29 | NLW50-6 | TT6X50 | MLV50-6 | TE-1100 | |

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

## FIXED CAPACITORS

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
|---|---|---|---|---|---|---|---|---|
| C8 | .001 | | BPD-001 | DD-102 | BYA10D1 | CCD-102 | B-210 | 5HK-D10 |
| C9 | .002 | | EF-001 | MFT-1000 | | CCF-102 | CT280A | |
| C10 | 47 N750 | | N750-DI 47 | DTN-47 | C10Q47U | CCTN-470 | CN7-447 | 10TCU-Q47 |
| C11 | 2.2 10% | | NPO-SI 2.2 | TCZ-2R2 | C10V22C | CCTO-2R2 | CNO-522 | 10TCC-V22 |
| C12 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C13 | 2.2 10% | | NPO-SI 2.2 | TCZ-2R2 | C10V22C | CCTO-2R2 | CNO-522 | 10TCC-V22 |
| C14 | 1-10 | #JV20688 | | 829-10 | | | | |
| C15 | 100 N750 | | N750-DI 100 | DTN-100 | C10T1U | CCTN-101 | CN7-310 | 10TCU-T10 |
| C16 | 470 | | DI-470 | DD-471 | BYA10T47 | CCD-471 | B-347 | 10TS-T47 |
| C17 | 10 N750 | § | N750-DI 10 | DTN-10 | C10Q1U | CCTN-100 | CN7-410 | 10TCU-Q10 |
| C18 | 47 N750 | | N750-DI 47 | DTN-47 | C10Q47U | CCTN-470 | CN7-447 | 10TCU-Q47 |
| C19 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C20 | 470 | | DI-470 | DD-471 | BYA10T47 | CCD-471 | B-347 | 10TS-T47 |
| C21 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C22 | .002 | | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D20 |
| C23 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C24 | .002 | Note 1 | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D20 |
| C25 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C26 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C27 | 100 N750 | | N750-DI 100 | DTN-100 | C10T1U | CCTN-101 | CN7-310 | 10TCU-T10 |
| C28 | .002 | | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D20 |
| C29 | .05 200V | | P288N-05 | DD-503 | CUB2S5 | 4DP-3-503 | GEM-415 | 2TM-S50 |
| C30 | 15 NPO 10% | | NPO-DI 15 | DTZ-15 | C10Q15C | CCTO-150 | CNO-415 | 10TCC-Q15 |
| C31 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C32 | .05 200V | | P288N-05 | DD-503 | CUB2S5 | 4DP-3-503 | GEM-415 | 2TM-S50 |
| C33 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |

# CHASSIS BOTTOM VIEW-CAPACITOR IDENT.



# PARTS LIST AND DESCRIPTIONS (Continued)

## FIXED CAPACITORS (cont)

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
| C34 | 100 N750 | Note 1 | N750-DI 100 | DTN-100 | C10T1U | CCTN-101 | CN7-310 | 10TCU-T10 |
| C35 | 47 N750 | | N750-DI 47 | DTN-47 | C10Q47U | CCTN-470 | CN7-447 | 10TCU-Q47 |
| C36 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C37 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C38 | .05 200V | | P288N-05 | DD-503 | CUB2S5 | 4DP-3-503 | GEM-415 | 2TM-S50 |
| C39 | .05 400V | | P488N-05 | DD-503 | CUB4S5 | 4DP-3-503 | GEM-415 | 4TM-S50 |
| C40 | .1 400V | | P486N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C41 | .005 10% | | DI-5000 | | PM6D5 | CCD-502 | JL-250 | 10TS-D50 |
| C42 | .2 400V | | P488N-2 | | CUB4P22 | 4DP-5-204 | GEM-402 | 4TM-P20 |
| C43 | 750 10% | | DI-750 | DD-751 | 5R5T75 | CCD-751 | GP375 | 10TS-T75 |
| C44 | .5 400V | | P488N-5 | | CUB4P5 | 4DP-6-504 | GEM-405 | 4TM-P50 |
| C45 | .25 600V | | P688N-25 | | CUB6D25 | 6DP-5-254 | GEM-6025 | 6TM-P25 |
| C46 | .25 600V | | P688N-25 | | CUB6P25 | 6DP-5-254 | GEM-6025 | 6TM-P25 |
| C47 | .05 400V | | P488N-05 | DD-503 | CUB4S5 | 4DP-3-503 | GEM-415 | 4TM-S50 |
| C48 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-4-104 | GEM-401 | 4TM-P10 |
| C49 | .005 10% | | DI-5000 | | PM6D5 | CCD-502 | JL-250 | 10TS-D50 |
| C50 | .2 400V | | P488N-2 | | CUB4P22 | 4DP-5-204 | GEM-402 | 4TM-P20 |
| C51 | 750 10% | | DI-750 | DD-751 | 5R5T75 | CCD-751 | GP375 | 10TS-T75 |
| C52 | .5 400V | | P488N-5 | | CUB4P5 | 4DP-6-504 | GEM-405 | 4TM-P50 |
| C53 | .25 600V | | P688N-25 | | CUB6P25 | 6DP-5-254 | GEM-6025 | 6TM-P25 |
| C54 | .25 600V | | P688N-25 | | CUB6P25 | 6DP-5-254 | GEM-6025 | 6TM-P25 |
| C55 | .01 1400V | | DAC-27 | DD16-103 | HVE16S1 | 16DP-3-103 | UAC-110 | BL-S10 |

* Harman-Kardon Part Number.
Note 1. Not used in some versions.

## CONTROLS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| | RESISTANCE | WATTS | Harman-Kardon PART No. | CENTRALAB PART No. | CLAROSTAT PART No. | CTS-IRC PART No. | MALLORY PART No. | |
| R1A | 2meg* | | RV3584202 | BT-175 | | | | Loudness, Left Channel |
| B | 2meg* | | | STR-175 | | | | Loudness, Right Channel |
| R2A | 500K | | RV2783209 | F1-41 | | | | Bass, Left Channel |
| B | 500K | | | R2-41 | | | | Bass, Right Channel |
| C | Spring | | | AK-32 | | | | Friction Drive |
| R3A | 500K | | RV2783209 | F1-41 | | | | Treble, Left Channel |
| B | 500K | | | R2-41 | | | | Treble, Right Channel |
| C | Spring | | | AK-32 | | | | Friction Drive |
| R4A | 500K | | RV3584181 | B-59 | AD47-500K-S | | FA55L | Balance, Left Channel |
| B | 500K | | | SR-59 | Not Req. | | RU55L | Balance, Right Channel |
| C | Shaft | | | Not Req. | KSS-3 | | CS3500 | |
| R5A | 100K | | RV3584203 | B-40 | AD47-100K-S | | FA15L | Mode, Left Channel |
| B | 100K | | | SR-40 | Not Req. | | RU15L | Mode, Right Channel |
| C | Shaft | | | Not Req. | KSS-3 | | CS3500 | |
| R6 | 50Ω | 2(WW) | RV3584208 | | | | | Output Balance, Left Channel |
| R7 | 50Ω | 2(WW) | RV3584208 | | | | | Output Balance, Right Channel |

* Taps @ 600K & 1.2meg. 1.2meg Tap not used.

## RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | RATING | REPLACEMENT DATA | | | ITEM No. | RATING | REPLACEMENT DATA | | |
|---|---|---|---|---|---|---|---|---|---|
| | | IRC PART No. | WORKMAN TV PART No. | REMARKS | | | IRC PART No. | WORKMAN TV PART No. | REMARKS |
| R8 | 68Ω | | | | R22 | 330K | | | |
| R9 | 68Ω | | | | R23 | 68K | | | (150K) * |
| R10 | 1000Ω | | | | R24 | 27K | | | |
| R11 | 22K | | | | R25 | 180K | | | |
| R12 | 1000Ω | | | | R26 | 180K | | | |
| R13 | 3.3meg | | | | R27 | 18K | | | |
| R14 | 10Ω | | | | R28 | 2.2meg | | | |
| R15 | 15K | | | | R29 | 150Ω | | | |
| R16 | 10K | | | | R30 | 27K | | | |
| R17 | 1000Ω | | | | R31 | 4700Ω | | | |
| R18 | 120Ω | | | | R32 | 470K | | | |
| R19 | 1000Ω | | | | R33 | 1meg | | | |
| R20 | 120Ω | | | | R34 | 150K | | | (330K) * |
| R21 | 2.2meg | | | | R35 | 10K | | | |

## RESISTORS (cont)

| ITEM No. | RATING | REPLACEMENT DATA | | | ITEM No. | RATING | REPLACEMENT DATA | | |
|---|---|---|---|---|---|---|---|---|---|
| | | IRC PART No | WORKMAN TV PART No | REMARKS | | | IRC PART No. | WORKMAN TV PART No. | REMARKS |
| R36 | 47K | | | | R72 | 68K | | | |
| R37 | 470K | | | | R73 | 1meg | | | |
| R38 | 2200Ω | | | | R74 | 1meg | | | |
| R39 | 47K | | | (33K) * | R75 | 6.8meg | | | |
| R40 | 1meg | | | | R76 | 270K | | | |
| R41 | 120K | | | | R77 | 2700Ω | | | |
| R42 | 1000Ω | | | | R78 | 330K | | | |
| R43 | 68K | | | (470K) * | R79 | 470K | | | |
| R44 | 68K | | | | R80 | 22K | | | |
| R45 | 6.8meg | | | | R81 | 1500Ω 5% | | | |
| R46 | 270K | | | | R82 | 20K 5% | | | |
| R47 | 2700Ω | | | | R83 | 330Ω 5% | | | |
| R48 | 330K | | | | R84 | 1000Ω | | | |
| R49 | 470K | | | | R85 | 270K | | | |
| R50 | 22K | | | | R86 | 1000Ω | | | |
| R51 | 1500Ω 5% | | | | R87 | 270K | | | |
| R52 | 20K 5% | | | | R88 | 47K | | | |
| R53 | 330Ω 5% | | | | R89 | 330Ω | | | Note 1 |
| R54 | 1000Ω | | | | R90 | 1200Ω 10W | PW10-1200 | 10W-SQ-1200 | |
| R55 | 270K | | | | R91 | 1200Ω 10W | PW10-1200 | 10W-SQ-1200 | Note 1 |
| R56 | 1000Ω | | | | R92 | 680Ω 3W | PW3-680 | 3G-680 | |
| R57 | 270K | | | | R93 | 470Ω 3W | PW3-470 | 3G-470 | |
| R58 | 47K | | | | R94 | 500Ω 3W | PW3-500 | 3G-500 | |
| R59 | 33K | | | | R95 | 270K | | | (150K) * |
| R60 | 33K | | | | R96 | 33K 3W | PW3-33K | 3G-33K | |
| R61 | 2200Ω | | | | R97 | 5Ω 5W | PW5-5 | 5W-SQ-5 | Note 1 |
| R62 | 330Ω | | | Note 1 | R98 | 270Ω 3W | PW3-270 | 3G-270 | |
| R63 | 10K | | | | R99 | 470Ω 3W | PW3-470 | 3G-470 | |
| R64 | 47K | | | | R100 | 470Ω 3W | PW3-470 | 3G-470 | |
| R65 | 470K | | | | R101 | 120Ω 5W | PW5-120 | 5W-SQ-120 | |
| R66 | 2200Ω | | | | R102 | 120Ω 5W | PW5-120 | 5W-SQ-120 | |
| R67 | 47K | | | (33K) * | R103 | 33Ω | | | |
| R68 | 1meg | | | | R104 | 33Ω | | | |
| R69 | 120K | | | | R105 | 330K | | | Note 1 |
| R70 | 1000Ω | | | | R106 | 330K | | | Note 1 |
| R71 | 68K | | | (47K) * | | | | | |

Note 1. Not used in some versions.
* Alternate Value.

## COMPONENT COMBINATIONS

| ITEM No. | USE | DESCRIPTION | Harman-Kardon PART No. | REPLACEMENT DATA |
|---|---|---|---|---|
| K1 | FM AFC Comp. | 470mmf, .01mfd, .01mfd, 47Ω, 470K, 1meg | PCCOM3080 | |
| K2 | AM RF Diode | 150mmf, 150mmf, 47K | PC781599 | Aerovox PA-98<br>Centralab PC-51<br>Sprague D-2 |
| K3 | Equalization Sw. Comp. | 360mmf, .0015mfd, 36K, 220K, 4.7meg | PCCOM4151 | |
| K4 | Rumble Filter | 750mmf, .003mfd, 470K, 2.2meg | PC3584185 | |
| K5 | Scratch Filter | .0015mfd, .0047mfd, 3300Ω, 27K | PC3584184 | |
| K6 | Tone Comp. | 750mmf, .003mfd, .0034mfd, .015mfd, 27K, 120K | PC2492902 | |
| K7 | Equalization Sw. Comp. | 360mmf, .0015mfd, 36K, 220K, 4.7meg | PCCOM4151 | |
| K8 | Rumble Filter | 750mmf, .003mfd, 470K, 2.2meg | PC3584185 | |
| K9 | Scratch Filter | .0015mfd, .0047mfd, 3300Ω, 27K | PC3584184 | |
| K10 | Tone Comp. | 750mmf, .003mfd, .0034mfd, .015mfd, 27K, 120K | PC2492902 | |

## COILS (RF-IF)

| ITEM No. | USE | REPLACEMENT DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|
| | | Harman-Kardon PART No. | Merit PART No. | Miller PART No. | Stancor PART No. | Workman TV PART No. | |
| L1 | RF Choke(.24uh) | GC28831 | | 4584 | RTC-8512 | T957 | |
| L2 | RF Choke(3.3uh) | GC3584423 | BC-564 | 4608 | RTC-8518 | T858 | |

# PARTS LIST AND DESCRIPTIONS (Continued)

## COILS (RF-IF) (cont)

| ITEM No. | USE | REPLACEMENT DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|
| | | Harman-Kardon PART No. | Merit PART No. | Miller PART No. | Stancor PART No. | Workman TV PART No. | |
| L3 | FM RF | GL2783391 | | | | | |
| L4 | FM Mixer Grid | GL2783350 | | | | | |
| L5 | FM Osc. | GL2783349 | | | | | |
| L6 | RF Choke(1uh) | GC2503069 | BC-561 | 4602 | RTC-8515 | T855 | |
| L7 | RF Choke(3.3uh) | GC3584423 | BC-564 | 4608 | RTC-8518 | T858 | |
| L8 | Fil. Choke(3.3uh) | GC3584423 | BC-564 | 4608 | RTC-8518 | T858 | |
| L9 | Fil. Choke(3.3uh) | GC3584423 | BC-564 | 4608 | RTC-8518 | T858 | |
| L10 | 1st FM IF | GT2783362 | FM-254 | 1463 | RTC-8599 | T633 | |
| L11 | 2nd FM IF | GT2783363 | FM-254 | 1463 | RTC-8599 | T633 | |
| L12 | Fil. Choke(3.3uh) | GC3584423 | BC-564 | 4608 | RTC-8518 | T858 | |
| L13 | 3rd FM IF | GT2783362 | FM-254 | 1463 | RTC-8599 | T633 | |
| L14 | Fil. Choke(3.3uh) | GC3584423 | BC-564 | 4608 | RTC-8518 | T858 | |
| L15 | Discriminator | GT2503052 | FM-253 | 1464 | RTC-8665 | T634 | |
| L16 | Loopstick | GL2783330 | BC-419 | 705-A | | T532 | |
| L17 | AM RF | GT2493012 | | | | | |
| L18 | AM Osc. | GLCOM3011 | BC-393 | 70-OSC | RTC-8647 | T512 | |
| L19 | 1st AM IF | GT2493013 | BC-352 | 12-C1 | RTC-8632 | T607 | |
| L20 | 2nd AM IF | GT2493014 | BC-353 | 12-C2 | RTC-8633 | T608 | |
| L21 | Fil. Choke (3.3uh) | GC3584423 | BC-564 | 4608 | RTC-8518 | T858 | |

## TRANSFORMER (POWER)

| ITEM No. | RATING | | | REPLACEMENT DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. 1 | SEC. 2 | Harman-Kardon PART No. | Merit PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. | |
| T1 | 117V ⓐ 1.8A | 140V ⓐ .850A AC | 6.3V ⓐ 4.4A | FT3584174 | | | | | |
| | SEC. 3 | SEC. 4 | SEC. 5 | | | | | | |
| | 6.3V ⓐ 3.8A | 48V ⓐ .130A DC | | | | | | | |

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE | | REPLACEMENT DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. | Harman-Kardon PART No. | Merit PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. | |
| T2 | 4000Ω CT | 16Ω Tap ⓐ 8Ω, 4Ω | FT3584175 | A-3129 ① | A-3851 ① | 24S77 ① | | ① Drill New Mounting Hole(s), Tape 10% Feedback Winding. |
| T3 | 4000Ω CT | 16Ω Tap ⓐ 8Ω, 4Ω | FT3584175 | A-3129 ① | A-3851 ① | 24S77 ① | | |

## POWER RECTIFIERS

| ITEM No. | RATING | REPLACEMENT DATA | | | | NOTES |
|---|---|---|---|---|---|---|
| | CURRENT (Measured) | Harman-Kardon PART No. | RCA PART No. | SARKES TARZIAN PART No. | SYLVANIA PART No. | |
| M1 | .240A | Z3584396 | 1N1763 | 40H | SR500 | |
| M2 | .240A | Z3584396 | 1N1763 | 40H | SR500 | |
| M3 | .130A | Z3584324 | 1N1763 | 40H | SR500 | |

## FUSES

| ITEM No. | TYPE | RATING | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Harman-Kardon PART No. | | LITTELFUSE PART No. | | BUSS PART No. | |
| | | | FUSE | HOLDER | FUSE | HOLDER | FUSE | HOLDER |
| M4 | 3AG | 4A 250V | ZCOM3299 | HC33901 | 312004 (3AG 4A 250V) | 342001 | MTH4 | HKP |

## MISCELLANEOUS

| ITEM No. | PART NAME | Harman-Kardon PART No. | NOTES |
|---|---|---|---|
| M5 | Tuning Cap. | JV2783184 | FM, 3 Gang |
| M6 | Tuning Cap. | JV2783183 | AM, 3 Gang (Ant. 11-262mmf, RF 30-395mmf, Osc. 17-105mmf) |
| M7 | Switch | ER2783175 | Function Selector (Rotary Type) |
| M8 | Switch | ESOM4020 | Phono Input Selector (DPDT Slide Type) |
| M9 | Switch | ESOM4020 | Equalization (DPDT Slide Type) |
| M10 | Switch | ESOM4020 | Stereo (Normal-Reverse) (DPDT Slide Type) |
| M11 | Switch | ESOM4020 | Contour (DPDT Slide Type) |
| M12 | Switch | ESOM4020 | Rumble Filter (DPDT Slide Type) |
| M13 | Switch | ESOM4020 | Scratch Filter (DPDT Slide Type) |
| M14 | Switch | ESOM2727 | Speaker Phase (DPDT Slide Type) |
| M15 | Switch | EP2783208 | Power Off-On (Pushbutton Type) |

## CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

| NAME | PART NO. | DESCRIPTION |
|---|---|---|
| Dial Glass | P3584346 | |
| Dial Pointer | P3584356 | FM |
| Dial Pointer | P3584357 | AM |
| Knob | PCOM4353 | Tuning, Loudness, Mode, Balance |
| Knob | PCOM4352 | Function Selector |
| Knob | PCOM4350 | Bass, Treble (Rear) |
| Knob | PCOM4351 | Bass, Treble (Front) |

## WIRING DATA

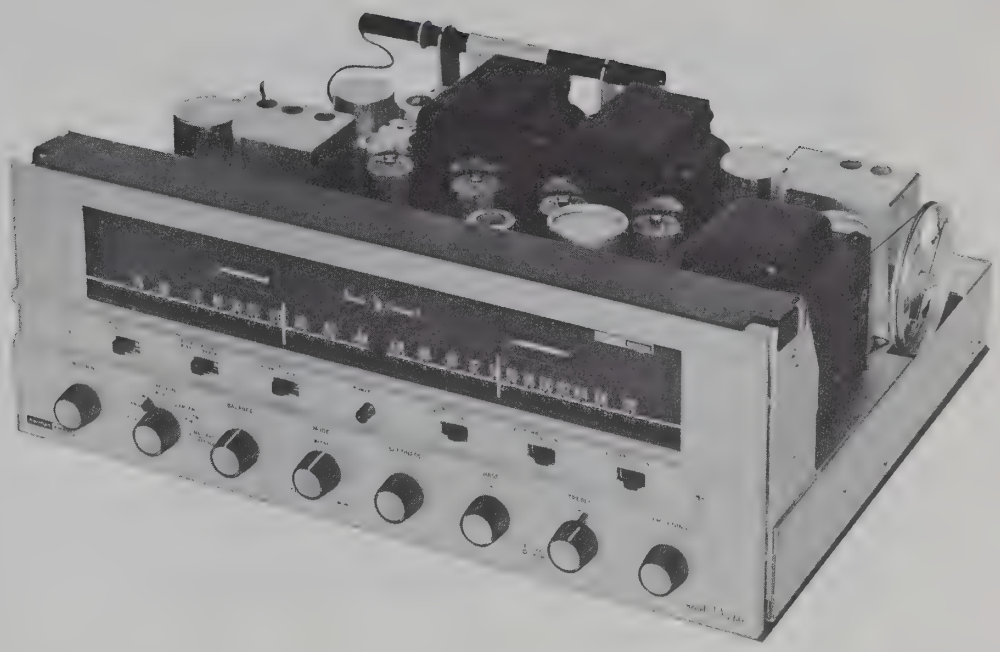
General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder

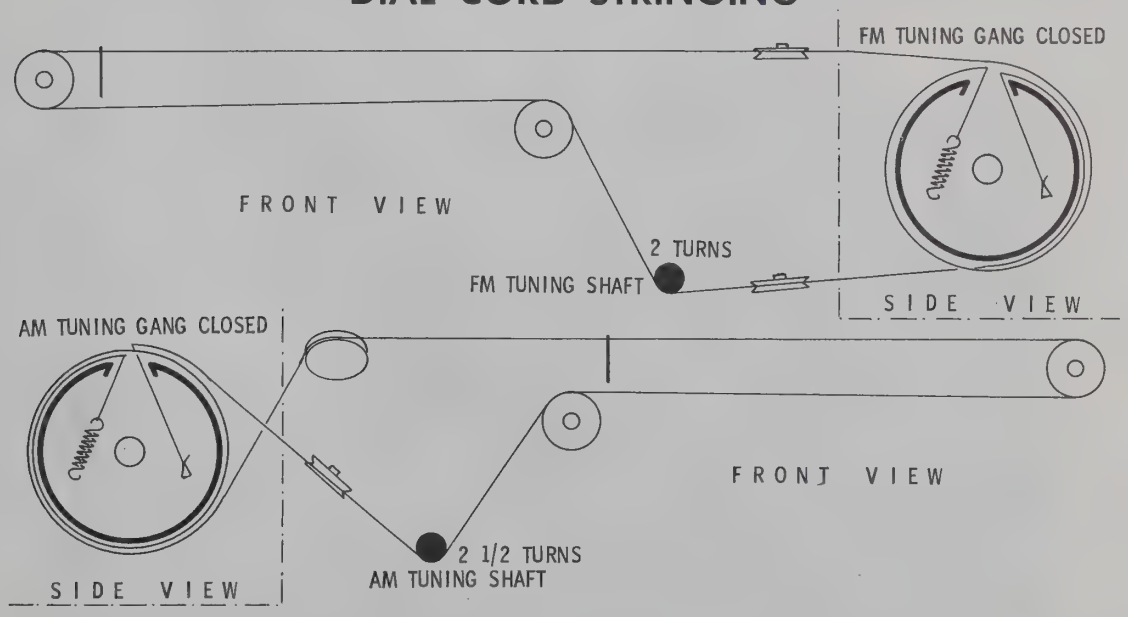
# HARMAN-KARDON MODEL TA-260 (Stereo Festival II)

HARMAN-KARDON MODEL
TA-260 (Stereo Festival II)



| | | | |
|---|---|---|---|
| TRADE NAME | Harman-Kardon Model TA260 (Stereo Festival II) | | |
| MANUFACTURER | Harman-Kardon, Inc., 520 Main Street, Westbury, L.I., N. Y. | | |
| TYPE SET | AC Operated 20 Tube FM-AM Receiver With Stereo Amplifier | | |
| POWER SUPPLY | 105 - 125 Volts AC, 60 Cycles | RATING | 180 Watts, 1.8 Amp. @117 Volts AC |
| TUNING RANGE—BROADCAST | 530 — 1640KC | FREQ. MOD. | 88 — 108MC |

## DIAL CORD STRINGING

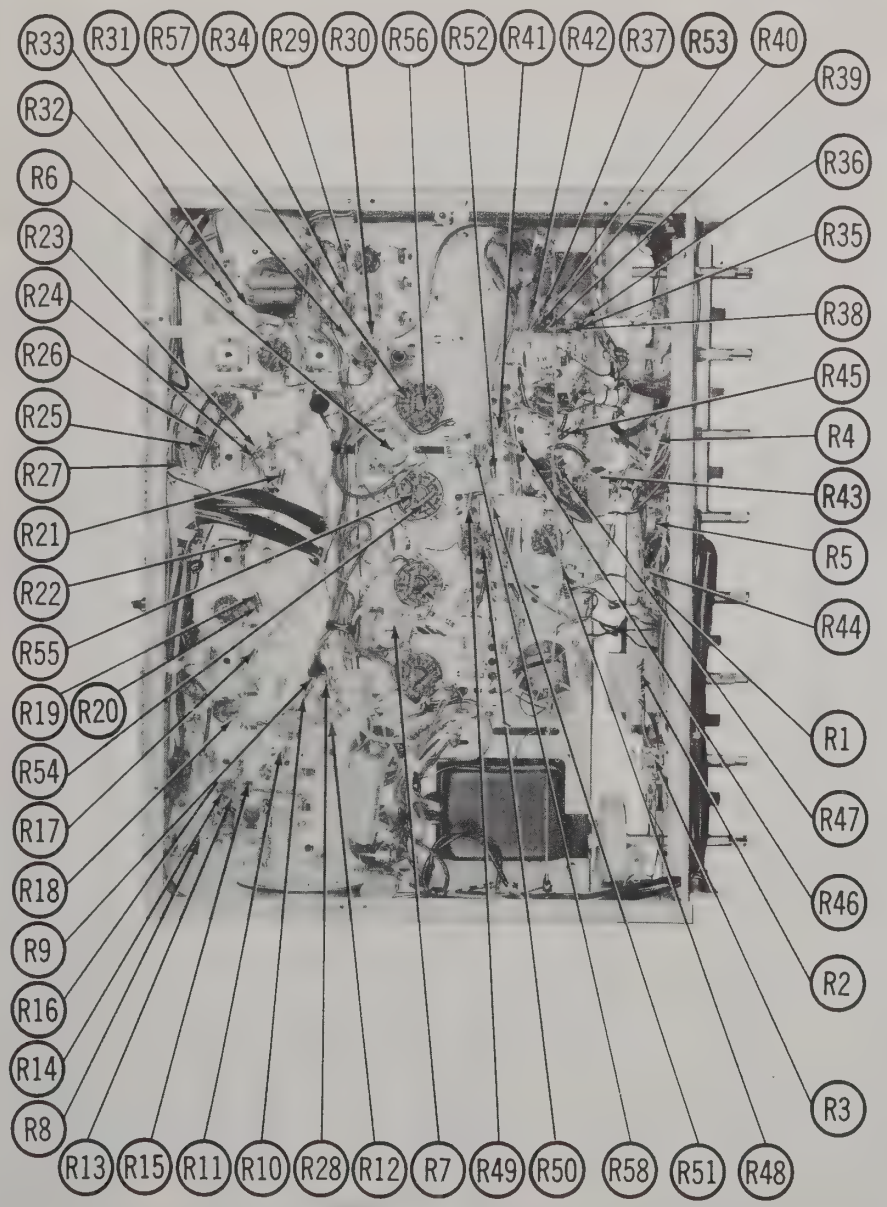



HARMAN-KARDON MODEL
TA-260 (Stereo Festival II)

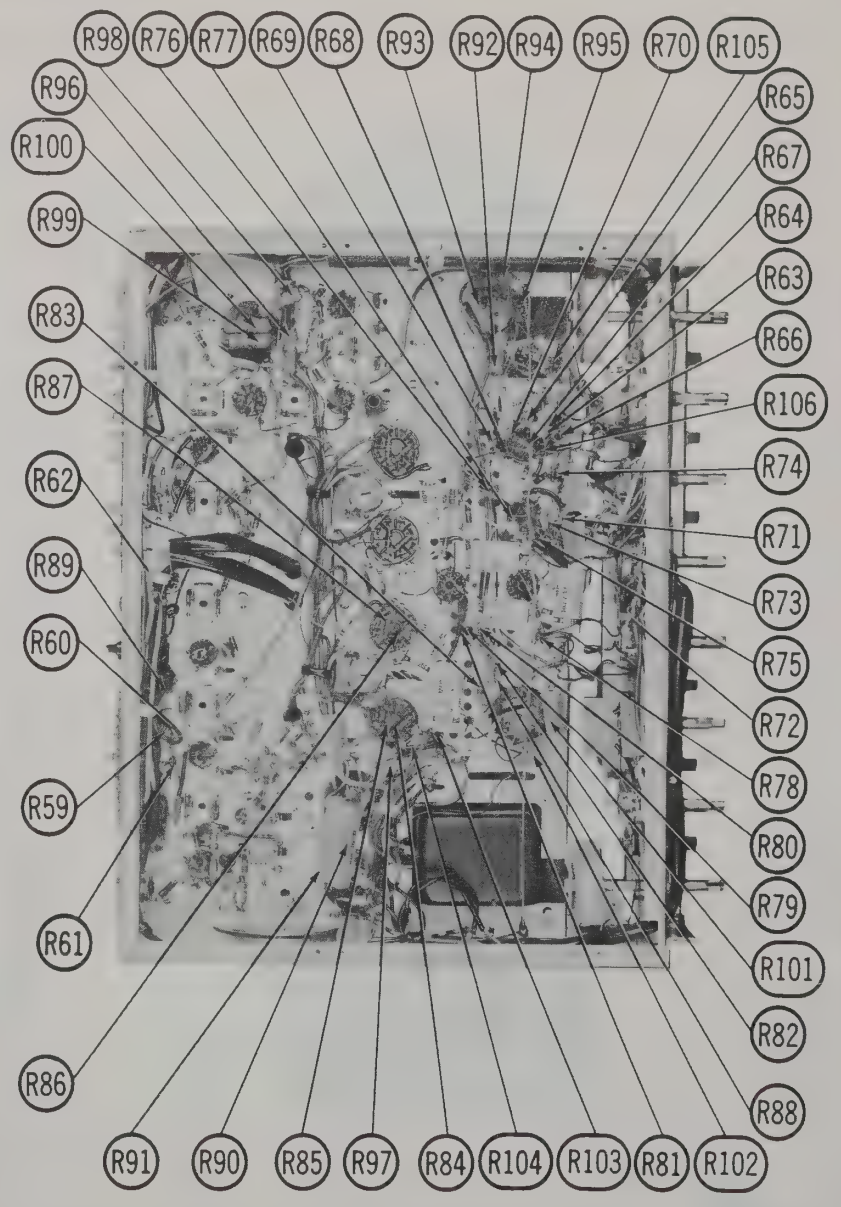
**HOWARD W. SAMS & CO., INC.** Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KK654

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America




CHASSIS BOTTOM VIEW-RESISTOR IDENT.
(R1 THRU R58)




CHASSIS BOTTOM VIEW-RESISTOR IDENT.
(R59 THRU R106)

# PARTS LIST AND DESCRIPTIONS (Continued)

## FIXED CAPACITORS (cont)

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
| C34 | 100 N750 | Note 1 | N750-DI 100 | DTN-100 | C10T1U | CCTN-101 | CN7-310 | 10TCU-T10 |
| C35 | 47 N750 | | N750-DI 47 | DTN-47 | C10Q47U | CCTN-470 | CN7-447 | 10TCU-Q47 |
| C36 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C37 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C38 | .05 200V | | P288N-05 | DD-503 | CUB2S5 | 4DP-3-503 | GEM-415 | 2TM-S50 |
| C39 | .05 400V | | P488N-05 | DD-503 | CUB4S5 | 4DP-3-503 | GEM-415 | 4TM-S50 |
| C40 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P10 |
| C41 | .005 10% | | DI-5000 | | PM6D5 | CCD-502 | JL-250 | 10TS-D50 |
| C42 | .2 400V | | P488N-2 | | CUB4P22 | 4DP-5-204 | GEM-402 | 4TM-P20 |
| C43 | 750 10% | | DI-750 | DD-751 | 5R5T75 | CCD-751 | GP375 | 10TS-T75 |
| C44 | .5 400V | | P488N-5 | | CUB4P5 | 4DP-6-504 | GEM-405 | 4TM-P50 |
| C45 | .25 600V | | P688N-25 | | CUB6D25 | 6DP-5-254 | GEM-6025 | 6TM-P25 |
| C46 | .25 600V | | P688N-25 | | CUB6P25 | 6DP-5-254 | GEM-6025 | 6TM-P25 |
| C47 | .05 400V | | P488N-05 | DD-503 | CUB4S5 | 4DP-3-503 | GEM-415 | 4TM-S50 |
| C48 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-4-104 | GEM-401 | 4TM-P10 |
| C49 | .005 10% | | DI-5000 | | PM6D5 | CCD-502 | JL-250 | 10TS-D50 |
| C50 | .2 400V | | P488N-2 | | CUB4P22 | 4DP-5-204 | GEM-402 | 4TM-P20 |
| C51 | 750 10% | | DI-750 | DD-751 | 5R5T75 | CCD-751 | GP375 | 10TS-T75 |
| C52 | .5 400V | | P488N-5 | | CUB4P5 | 4DP-6-504 | GEM-405 | 4TM-P50 |
| C53 | .25 600V | | P688N-25 | | CUB6P25 | 6DP-5-254 | GEM-6025 | 6TM-P25 |
| C54 | .25 600V | | P688N-25 | | CUB6P25 | 6DP-5-254 | GEM-6025 | 6TM-P25 |
| C55 | .01 1400V | | DAC-27 | DD16-103 | HVE16S1 | 16DP-3-103 | UAC-110 | BL-S10 |

# Harman-Kardon Part Number.
Note 1. Not used in some versions.

## CONTROLS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| | RESISTANCE | WATTS | Harman-Kardon PART No. | CENTRALAB PART No. | CLAROSTAT PART No. | CTS-IRC PART No. | MALLORY PART No. | |
| R1A | 2meg* | ½ | RV3584202 | BT-175 | | | | Loudness, Left Channel |
| B | 2meg* | ½ | | STR-175 | | | | Loudness, Right Channel |
| R2A | 500K | ½ | RV2783209 | F1-41 | | | | Bass, Left Channel |
| B | 500K | ½ | | R2-41 | | | | Bass, Right Channel |
| C | Spring | | | AK-32 | | | | Friction Drive |
| R3A | 500K | ½ | RV2783209 | F1-41 | | | | Treble, Left Channel |
| B | 500K | ½ | | R2-41 | | | | Treble, Right Channel |
| C | Spring | | | AK-32 | | | | Friction Drive |
| R4A | 500K | ½ | RV3584181 | B-59 | AD47-500K-S | | FA55L | Balance, Left Channel |
| B | 500K | ½ | | SR-59 | Not Req. | | RU55L | Balance, Right Channel |
| C | Shaft | | | Not Req. | KSS-3 | | CS3500 | |
| R5A | 100K | ½ | RV3584203 | B-40 | AD47-100K-S | | FA15L | Mode, Left Channel |
| B | 100K | ½ | | SR-40 | Not Req. | | RU15L | Mode, Right Channel |
| C | Shaft | | | Not Req. | KSS-3 | | CS3500 | |
| R6 | 50Ω | 2(WW) | RV3584208 | | | | | Output Balance, Left Channel |
| R7 | 50Ω | 2(WW) | RV3584208 | | | | | Output Balance, Right Channel |

* Taps @ 600K & 1.2meg. 1.2meg Tap not used.

## RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | RATING | REPLACEMENT DATA | | | ITEM No. | RATING | REPLACEMENT DATA | | |
|---|---|---|---|---|---|---|---|---|---|
| | | IRC PART No. | WORKMAN TV PART No. | REMARKS | | | IRC PART No. | WORKMAN TV PART No. | REMARKS |
| R8 | 68Ω | | | | R22 | 330K | | | |
| R9 | 68Ω | | | | R23 | 68K | | | (150K) * |
| R10 | 1000Ω | | | | R24 | 27K | | | |
| R11 | 22K | | | | R25 | 180K | | | |
| R12 | 1000Ω | | | | R26 | 180K | | | |
| R13 | 3.3meg | | | | R27 | 18K | | | |
| R14 | 10Ω | | | | R28 | 2.2meg | | | |
| R15 | 15K | | | | R29 | 150Ω | | | |
| R16 | 10K | | | | R30 | 27K | | | |
| R17 | 1000Ω | | | | R31 | 4700Ω | | | |
| R18 | 120Ω | | | | R32 | 470K | | | |
| R19 | 1000Ω | | | | R33 | 1meg | | | |
| R20 | 120Ω | | | | R34 | 150K | | | (330K) * |
| R21 | 2.2meg | | | | R35 | 10K | | | |

## RESISTORS (cont)

| ITEM No. | RATING | REPLACEMENT DATA | | | ITEM No. | RATING | REPLACEMENT DATA | | |
|---|---|---|---|---|---|---|---|---|---|
| | | IRC PART No. | WORKMAN TV PART No. | REMARKS | | | IRC PART No. | WORKMAN TV PART No. | REMARKS |
| R36 | 47K | | | | R72 | 68K | | | |
| R37 | 470K | | | | R73 | 1meg | | | |
| R38 | 2200Ω | | | | R74 | 1meg | | | |
| R39 | 47K | | | (33K) * | R75 | 6.8meg | | | |
| R40 | 1meg | | | | R76 | 270K | | | |
| R41 | 120K | | | | R77 | 2700Ω | | | |
| R42 | 1000Ω | | | | R78 | 330K | | | |
| R43 | 68K | | | (470K) * | R79 | 470K | | | |
| R44 | 68K | | | | R80 | 22K | | | |
| R45 | 6.8meg | | | | R81 | 1500Ω 5% | | | |
| R46 | 270K | | | | R82 | 20K 5% | | | |
| R47 | 2700Ω | | | | R83 | 330Ω 5% | | | |
| R48 | 330K | | | | R84 | 1000Ω | | | |
| R49 | 470K | | | | R85 | 270K | | | |
| R50 | 22K | | | | R86 | 1000Ω | | | |
| R51 | 1500Ω 5% | | | | R87 | 270K | | | |
| R52 | 20K 5% | | | | R88 | 47K | | | |
| R53 | 330Ω 5% | | | | R89 | 330Ω | | | Note 1 |
| R54 | 1000Ω | | | | R90 | 1200Ω 10W | PW10-1200 | 10W-SQ-1200 | |
| R55 | 270K | | | | R91 | 1200Ω 10W | PW10-1200 | 10W-SQ-1200 | Note 1 |
| R56 | 1000Ω | | | | R92 | 680Ω 3W | PW3-680 | 3G-680 | |
| R57 | 270K | | | | R93 | 470Ω 3W | PW3-470 | 3G-470 | |
| R58 | 47K | | | | R94 | 500Ω 3W | PW3-500 | 3G-500 | |
| R59 | 33K | | | | R95 | 270K | | | (150K) * |
| R60 | 33K | | | | R96 | 33K 3W | PW3-33K | 3G-33K | |
| R61 | 2200Ω | | | | R97 | 5Ω 5W | PW5-5 | 5W-SQ-5 | Note 1 |
| R62 | 330Ω | | | Note 1 | R98 | 270Ω 3W | PW3-270 | 3G-270 | |
| R63 | 10K | | | | R99 | 470Ω 3W | PW3-470 | 3G-470 | |
| R64 | 47K | | | | R100 | 470Ω 3W | PW3-470 | 3G-470 | |
| R65 | 470K | | | | R101 | 120Ω 5W | PW5-120 | 5W-SQ-120 | |
| R66 | 2200Ω | | | | R102 | 120Ω 5W | PW5-120 | 5W-SQ-120 | |
| R67 | 47K | | | (33K) * | R103 | 33Ω | | | |
| R68 | 1meg | | | | R104 | 33Ω | | | |
| R69 | 120K | | | | R105 | 330K | | | Note 1 |
| R70 | 1000Ω | | | | R106 | 330K | | | Note 1 |
| R71 | 68K | | | (47K) * | | | | | |

Note 1. Not used in some versions.
* Alternate Value.

## COMPONENT COMBINATIONS

| ITEM No. | USE | DESCRIPTION | Harman-Kardon PART No. | REPLACEMENT DATA |
|---|---|---|---|---|
| K1 | FM AFC Comp. | 470mmf, .01mfd, .01mfd, 47Ω, 470K, 1meg | PCCOM3080 | |
| K2 | AM RF Diode | 150mmf, 150mmf, 47K | PC781599 | Aerovox PA-98<br>Centralab PC-51<br>Sprague D-2 |
| K3 | Equalization Sw. Comp. | 360mmf, .0015mfd, 36K, 220K, 4.7meg | PCCOM4151 | |
| K4 | Rumble Filter | 750mmf, .003mfd, 470K, 2.2meg | PC3584185 | |
| K5 | Scratch Filter | .0015mfd, .0047mfd, 3300Ω, 27K | PC3584184 | |
| K6 | Tone Comp. | 750mmf, .003mfd, .0034mfd, .015mfd, 27K, 120K | PC2492902 | |
| K7 | Equalization Sw. Comp. | 360mmf, .0015mfd, 36K, 220K, 4.7meg | PCCOM4151 | |
| K8 | Rumble Filter | 750mmf, .003mfd, 470K, 2.2meg | PC3584185 | |
| K9 | Scratch Filter | .0015mfd, .0047mfd, 3300Ω, 27K | PC3584184 | |
| K10 | Tone Comp. | 750mmf, .003mfd, .0034mfd, .015mfd, 27K, 120K | PC2492902 | |

## COILS (RF-IF)

| ITEM No. | USE | REPLACEMENT DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|
| | | Harman-Kardon PART No. | Merit PART No. | Miller PART No. | Stancor PART No. | Workman TV PART No. | |
| L1 | RF Choke(.24uh) | GC28831 | | 4584 | RTC-8512 | T957 | |
| L2 | RF Choke(3.3uh) | GC3584423 | BC-564 | 4608 | RTC-8518 | T858 | |

# PARTS LIST AND DESCRIPTIONS (Continued)

## COILS (RF-IF) (cont)

| ITEM No. | USE | REPLACEMENT DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|
| | | Harman-Kardon PART No. | Merit PART No. | Miller PART No. | Stancor PART No. | Workman TV PART No. | |
| L3 | FM RF | GL2783391 | | | | | |
| L4 | FM Mixer Grid | GL2783350 | | | | | |
| L5 | FM Osc. | GL2783349 | | | | | |
| L6 | RF Choke(1uh) | GC2503069 | BC-561 | 4602 | RTC-8515 | T855 | |
| L7 | RF Choke(3.3uh) | GC3584423 | BC-564 | 4608 | RTC-8518 | T858 | |
| L8 | Fil. Choke(3.3uh) | GC3584423 | BC-564 | 4608 | RTC-8518 | T858 | |
| L9 | Fil. Choke(3.3uh) | GC3584423 | BC-564 | 4608 | RTC-8518 | T858 | |
| L10 | 1st FM IF | GT2783362 | FM-254 | 1463 | RTC-8599 | T633 | |
| L11 | 2nd FM IF | GT2783363 | FM-254 | 1463 | RTC-8599 | T633 | |
| L12 | Fil. Choke(3.3uh) | GC3584423 | BC-564 | 4608 | RTC-8518 | T858 | |
| L13 | 3rd FM IF | GT2783362 | FM-254 | 1463 | RTC-8599 | T633 | |
| L14 | Fil. Choke(3.3uh) | GC3584423 | BC-564 | 4608 | RTC-8518 | T858 | |
| L15 | Discriminator | GT2503052 | FM-253 | 1464 | RTC-8665 | T634 | |
| L16 | Loopstick | GL2783330 | BC-419 | 705-A | | T532 | |
| L17 | AM RF | GT2493012 | | | | | |
| L18 | AM Osc. | GLCOM3011 | BC-393 | 70-C8C | RTC-8647 | T512 | |
| L19 | 1st AM IF | GT2493013 | BC-352 | 12-C1 | RTC-8632 | T607 | |
| L20 | 2nd AM IF | GT2493014 | BC-353 | 12-C2 | RTC-8633 | T608 | |
| L21 | Fil. Choke (3.3uh) | GC3584423 | BC-564 | 4608 | RTC-8518 | T858 | |

## TRANSFORMER (POWER)

| ITEM No. | RATING | | | REPLACEMENT DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. 1 | SEC. 2 | Harman-Kardon PART No. | Merit PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. | |
| T1 | 117V ⓐ 1.8A | 140V ⓐ .850A AC | 6.3V ⓐ 4.4A | FT3584174 | | | | | |
| | SEC. 3 | SEC. 4 | SEC. 5 | | | | | | |
| | 6.3V ⓐ 3.8A | 48V ⓐ .130A DC | | | | | | | |

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE | | REPLACEMENT DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. | Harman-Kardon PART No. | Merit PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. | |
| T2 | 4000Ω CT | 16Ω Tap ⓐ 8Ω, 4Ω | FT3584175 | A-3129 ① | A-3851 ① | 24S77 ① | | ① Drill New Mounting Hole(s). Tape 10% Feedback Winding. |
| T3 | 4000Ω CT | 16Ω Tap ⓐ 8Ω, 4Ω | FT3584175 | A-3129 ① | A-3851 ① | 24S77 ① | | |

## POWER RECTIFIERS

| ITEM No. | RATING | REPLACEMENT DATA | | | | NOTES |
|---|---|---|---|---|---|---|
| | CURRENT (Measured) | Harman-Kardon PART No. | RCA PART No. | SARKES TARZIAN PART No. | SYLVANIA PART No. | |
| M1 | .240A | Z3584396 | 1N1763 | 40H | SR500 | |
| M2 | .240A | Z3584396 | 1N1763 | 40H | SR500 | |
| M3 | .130A | Z3584324 | 1N1763 | 40H | SR500 | |

## FUSES

| ITEM No. | TYPE | RATING | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Harman-Kardon PART No. | | LITTELFUSE PART No. | | BUSS PART No. | |
| | | | FUSE | HOLDER | FUSE | HOLDER | FUSE | HOLDER |
| M4 | 3AG | 4A 250V | ZCOM3299 | HC33901 | 312004 (3AG 4A 250V) | 342001 | MTH4 | HKP |

## MISCELLANEOUS

| ITEM No. | PART NAME | Harman-Kardon PART No. | NOTES |
|---|---|---|---|
| M5 | Tuning Cap. | JV2783184 | FM, 3 Gang |
| M6 | Tuning Cap. | JV2783183 | AM, 3 Gang (Ant. 11-262mmf, RF 30-395mmf, Osc. 17-105mmf) |
| M7 | Switch | ER2783175 | Function Selector (Rotary Type) |
| M8 | Switch | ESOM4020 | Phono Input Selector (DPDT Slide Type) |
| M9 | Switch | ESOM4020 | Equalization (DPDT Slide Type) |
| M10 | Switch | ESOM4020 | Stereo (Normal-Reverse) (DPDT Slide Type) |
| M11 | Switch | ESOM4020 | Contour (DPDT Slide Type) |
| M12 | Switch | ESOM4020 | Rumble Filter (DPDT Slide Type) |
| M13 | Switch | ESOM4020 | Scratch Filter (DPDT Slide Type) |
| M14 | Switch | ESOM2727 | Speaker Phase (DPDT Slide Type) |
| M15 | Switch | EP2783208 | Power Off-On (Pushbutton Type) |

## CABINETS & CABINET PARTS

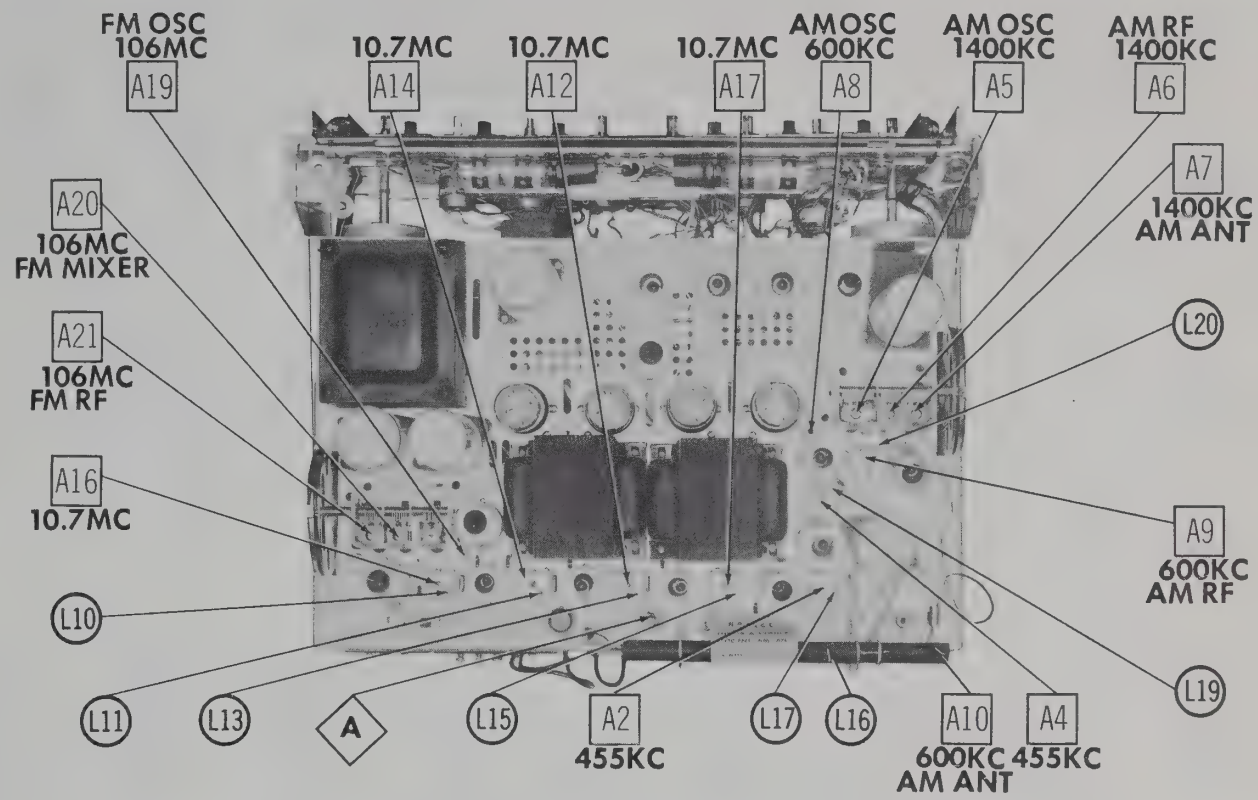
**(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)**

| NAME | PART NO. | DESCRIPTION |
|---|---|---|
| Dial Glass | P3584346 | |
| Dial Pointer | P3584356 | FM |
| Dial Pointer | P3584357 | AM |
| Knob | PCOM4353 | Tuning, Loudness, Mode, Balance |
| Knob | PCOM4352 | Function Selector |
| Knob | PCOM4350 | Bass, Treble (Rear) |
| Knob | PCOM4351 | Bass, Treble (Front) |

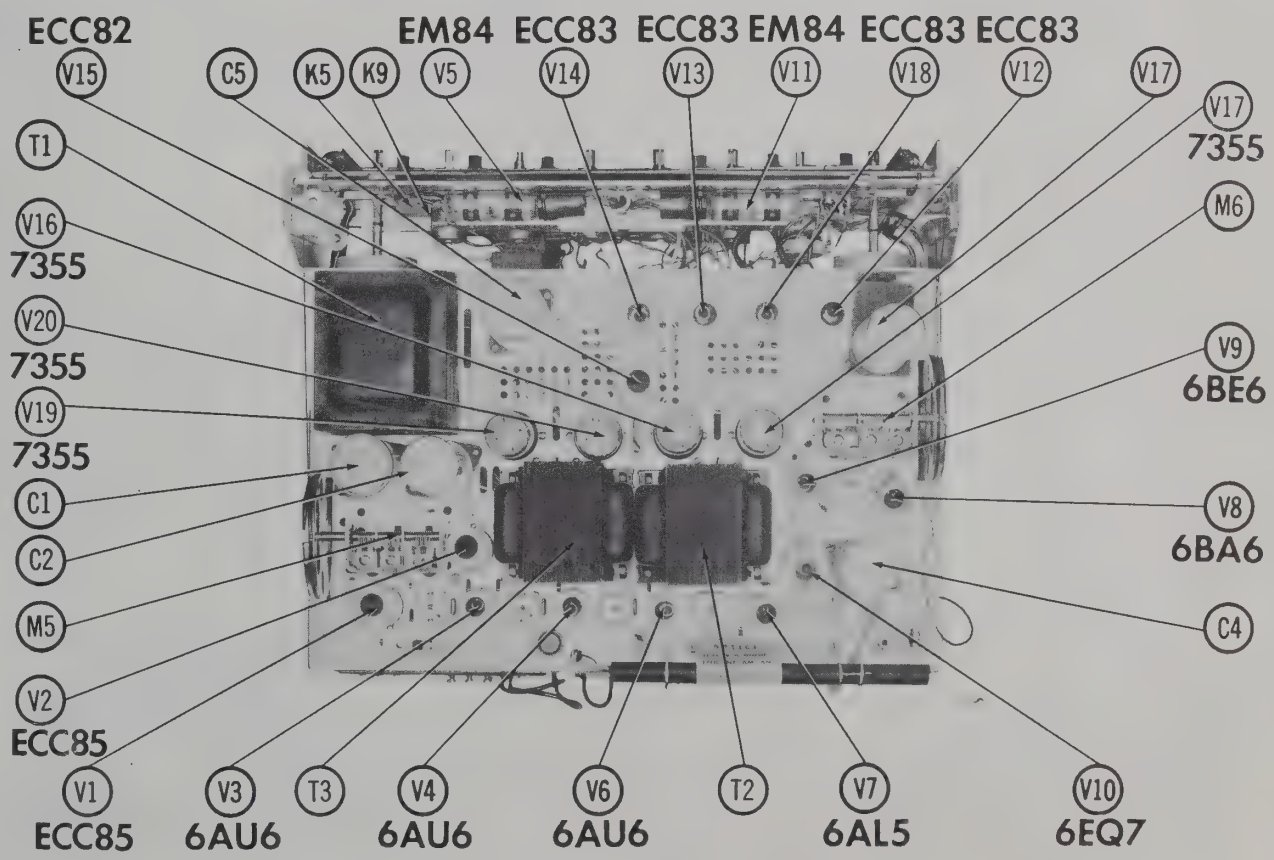
## WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

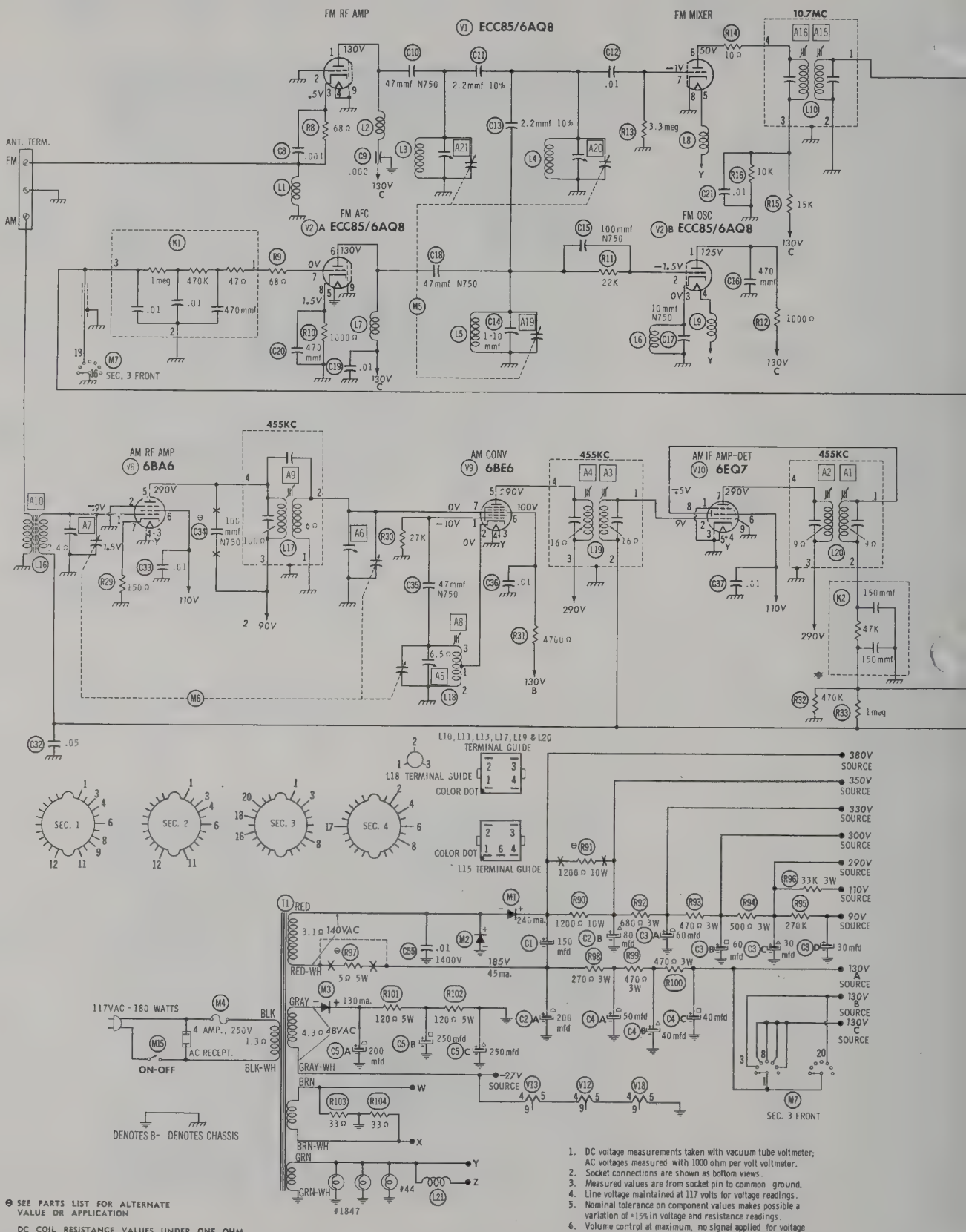
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K ($7\frac{1}{2}$ Ft. Length)




CHASSIS TOP VIEW-ALIGN. & INDUCTOR IDENT.




CHASSIS - TOP VIEW




Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

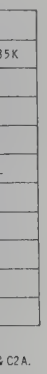
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

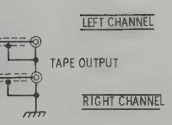
© Howard W. Sams & Co., Inc. 1961

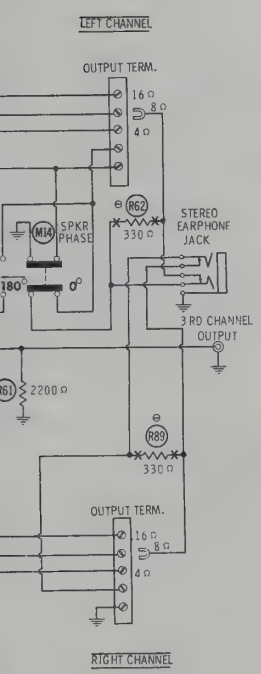
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

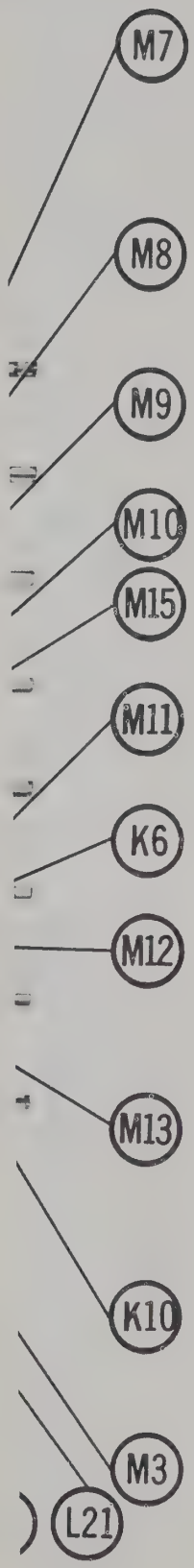
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.



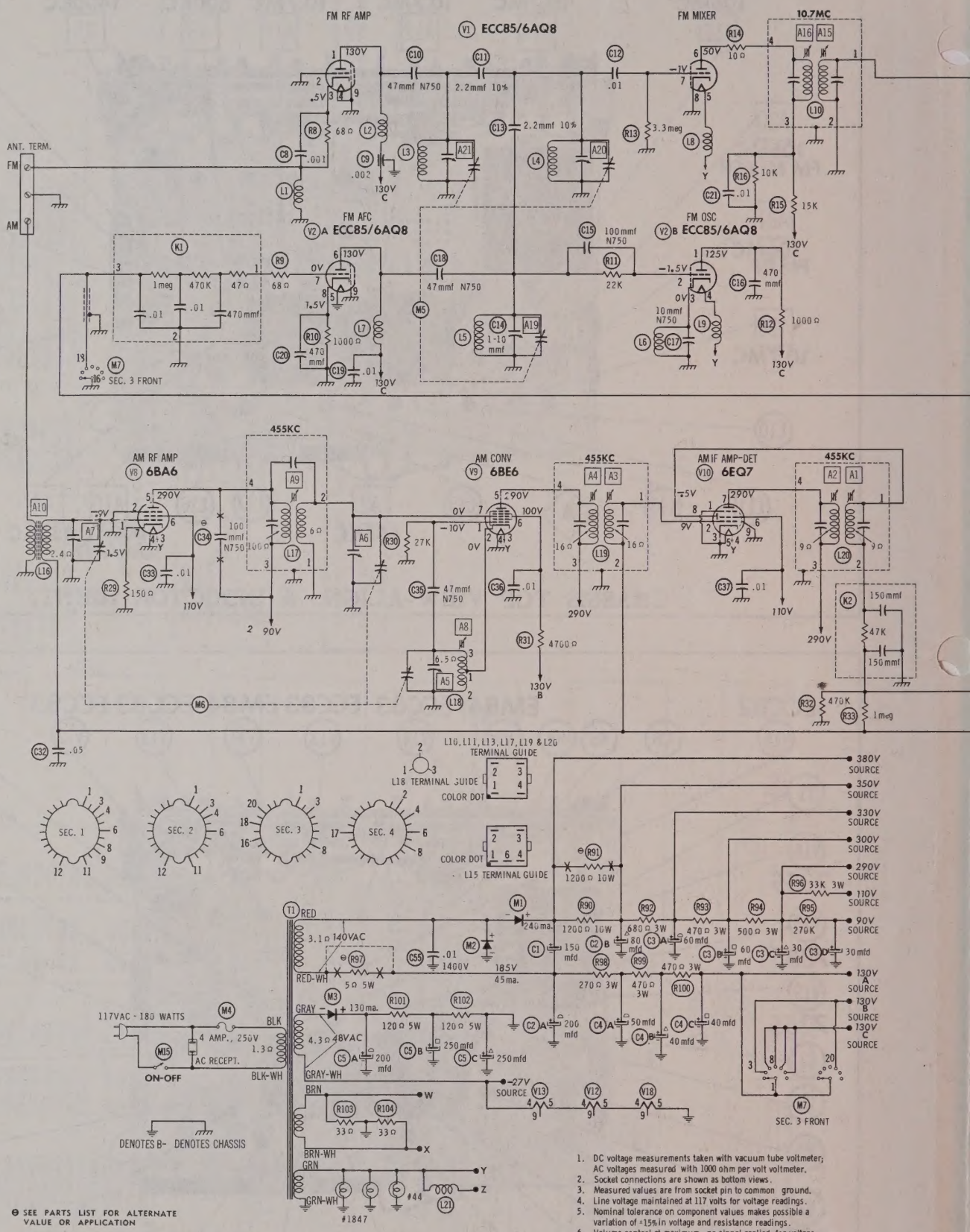
& C2A.


LEFT CHANNEL
TAPE OUTPUT
RIGHT CHANNEL


LEFT CHANNEL
OUTPUT TERM.
16Ω
8Ω
4Ω
R62
330Ω
M14
SPKR PHASE
STEREO EARPHONE JACK
180°
0°
3RD CHANNEL OUTPUT
2200Ω
R89
330Ω
OUTPUT TERM.
16Ω
8Ω
4Ω
RIGHT CHANNEL


M7
M8
M9
M10
M15
M11
K6
M12
M13
K10
M3
L21

DENT.




⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

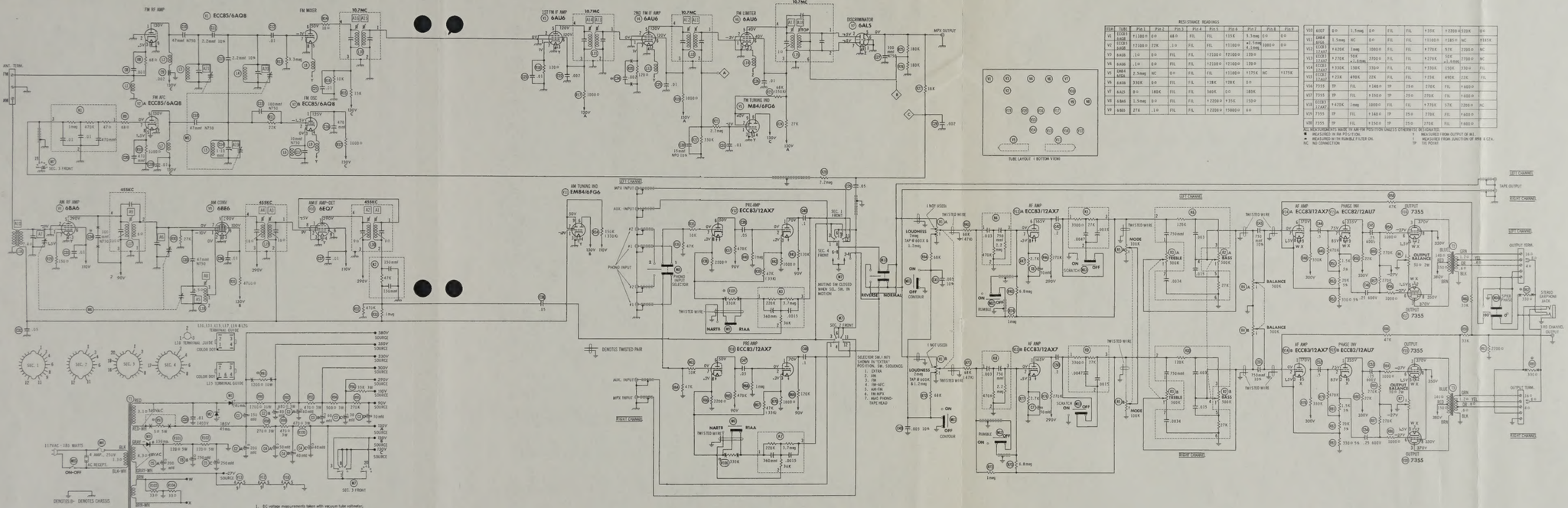
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

©Howard W. Sams & Co., Inc. 1961

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.




TUBE LAYOUT ( BOTTOM VIEW)

RESISTANCE READINGS

| ITEM | TUBE | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 | Pin 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| V1 | ECC85 6AQ8 | ↑100Ω | 0Ω | 68Ω | FIL | FIL | 135K | 9.3meg ↓ 6.1meg | 0Ω | 0Ω |
| V2 | ECC85 6AQ8 | ↑210Ω | 22K | 1Ω | FIL | FIL | ↑310Ω | 1000Ω | 0Ω | |
| V3 | 6AU6 | 1Ω | 0Ω | FIL | FIL | ↑210Ω | ↑210Ω | 320Ω | | |
| V4 | 6AU6 | 1Ω | 0Ω | FIL | FIL | ↑210Ω | ↑210Ω | 320Ω | | |
| V5 | 6AL5 | 2.5meg | NC | 0Ω | FIL | FIL | ↑310Ω | ↑175K | NC | ↑175K |
| V6 | 6AU6 | 330K | 0Ω | FIL | FIL | 78K | 12BK | 0Ω | | |
| V7 | 6AL5 | 0Ω | 180K | FIL | FIL | 360K | 0Ω | 180K | | |
| V8 | 6BA6 | 1.5meg | 0Ω | FIL | FIL | ↑220Ω | ↑35K | 150Ω | | |
| V9 | 6BE6 | 27K | 1Ω | FIL | FIL | ↑220Ω | ↑3800Ω | 6Ω | | |

| ITEM | TUBE | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 | Pin 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| V10 | 6EQ7 | 0Ω | 1.5meg | 0Ω | FIL | FIL | ↑35K | ↑220Ω | 520K | 0Ω |
| V11 | EM84 6FG6 | 1.5meg | NC | 0Ω | FIL | FIL | ↑150Ω | 72BΩ | NC | 4545K |
| V12 | ECC83 12AX7 | ↑420K | 1meg | 100Ω | FIL | FIL | ↑77K | 57K | 2200Ω | NC |
| V13 | ECC83 12AX7 | ↑270K | 70K ↓ 41.8K | 270Ω | FIL | FIL | ↑270K | 70K ↓ 41.8K | 2700Ω | NC |
| V14 | ECC82 12AU7 | ↑330K | 150K | 330Ω | FIL | FIL | ↑330K | 150K | 330Ω | FIL |
| V15 | ECC82 12AU7 | ↑23K | 490K | 22K | FIL | FIL | ↑23K | 490K | 22K | FIL |
| V16 | 7355 | TP | FIL | ↑140Ω | TP | 25Ω | 270K | FIL | ↑600Ω | |
| V17 | 7355 | TP | FIL | ↑150Ω | TP | 25Ω | 270K | FIL | ↑600Ω | |
| V18 | ECC83 12AX7 | ↑420K | 1meg | 100Ω | FIL | FIL | ↑77K | 57K | 2200Ω | NC |
| V19 | 7355 | TP | FIL | ↑140Ω | TP | 25Ω | 270K | FIL | ↑600Ω | |
| V20 | 7355 | TP | FIL | ↑150Ω | TP | 25Ω | 270K | FIL | ↑600Ω | |

DC RESISTANCE MADE WITH AM-FM POSITION UNLESS OTHERWISE INDICATED
■ MEASURED IN FM POSITION.
▲ MEASURED WITH RUMBLE FILTER ON.
N/C NO CONNECTION
↑ MEASURED FROM OUTPUT OF IM.I.
↓ MEASURED FROM JUNCTION OF IRIS 4 CCA. TIE POINT
TP

SEC. 3 FRONT

SEC. 1 FRONT

SEC. 2 FRONT

SEC. 4 FRONT

SEC. 5 FRONT

SEC. 6 FRONT

SEC. 7 FRONT

SEC. 8 FRONT

SEC. 9 FRONT

SEC. 10 FRONT

SEC. 11 FRONT

SEC. 12 FRONT

SELECTOR SW.( NOT SHOWN IN "EXTRA" POSITION, SW. SEQUENCE:
1. EXTRA
2. FM
3. AM
4. SW-MPX
5. AM-FM
6. FM-MPX
7. MAG PHONO-TAPE HEAD

INDICATING SW CLOSED WHEN SEL. SW. IN MOTION

NOT USED

NOT USED

LOUDNESS 2meg TAP @ 600Ω & 1.1meg

LOUDNESS 1meg TAP @ 600Ω & 1.1meg

ON-OFF CONTOUR

TWISTED WIRE

LEFT CHANNEL

RIGHT CHANNEL

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom view.
3. Unless otherwise noted, all voltages are to ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

● SEE PARTS LIST FOR ALTERNATE VALUES OR APPLICATION

DC COIL RESISTANCE VALUES UNDER OHMS MOT. SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END).

A PHOTOFACT STANDARD NOTATION SCHEMATIC
©Howard W. Sams & Co., Inc. 1961

**HARMAN-KARDON MODEL TA-260 (Stereo Festival II)**

# PARTS LIST AND DESCRIPTIONS

## TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

| ITEM No. | USE | TYPE |
|---|---|---|
| V1 | FM RF Amp. -FM Mixer | ECC85/6AQ8 |
| V2 | FM Osc. -FM AFC | ECC85/6AQ8 |
| V3 | 1st FM IF Amplifier | 6AU6 |
| V4 | 2nd FM IF Amplifier | 6AU6 |
| V5 | FM Tuning Indicator | EM84/6FG6 |
| V6 | FM Limiter | 6AU6 |
| V7 | Discriminator | 6AL5 |
| V8 | AM RF Amplifier | 6BA6 |
| V9 | AM Converter | 6BE6 |
| V10 | AM IF Amp. -AM Det. | 6EQ7 |
| V11 | AM Tuning Indicator | EM84/6FG6 |
| V12 | Left Channel Preamp. | ECC83/12AX7 |
| V13 | Left Channel AF Amp. - Right Channel AF Amp. | ECC83/12AX7 |
| V14 | Left Channel AF Amp. - Right Channel AF Amp. | ECC83/12AX7 |
| V15 | Left Channel Phase Inv. - Right Channel Phase Inv. | ECC82/12AU7 |
| V16 | Left Channel Output | 7355 |
| V17 | Left Channel Output | 7355 |
| V18 | Right Channel Preamp. | ECC83/12AX7 |
| V19 | Right Channel Output | 7355 |
| V20 | Right Channel Output | 7355 |

## ELECTROLYTIC CAPACITORS

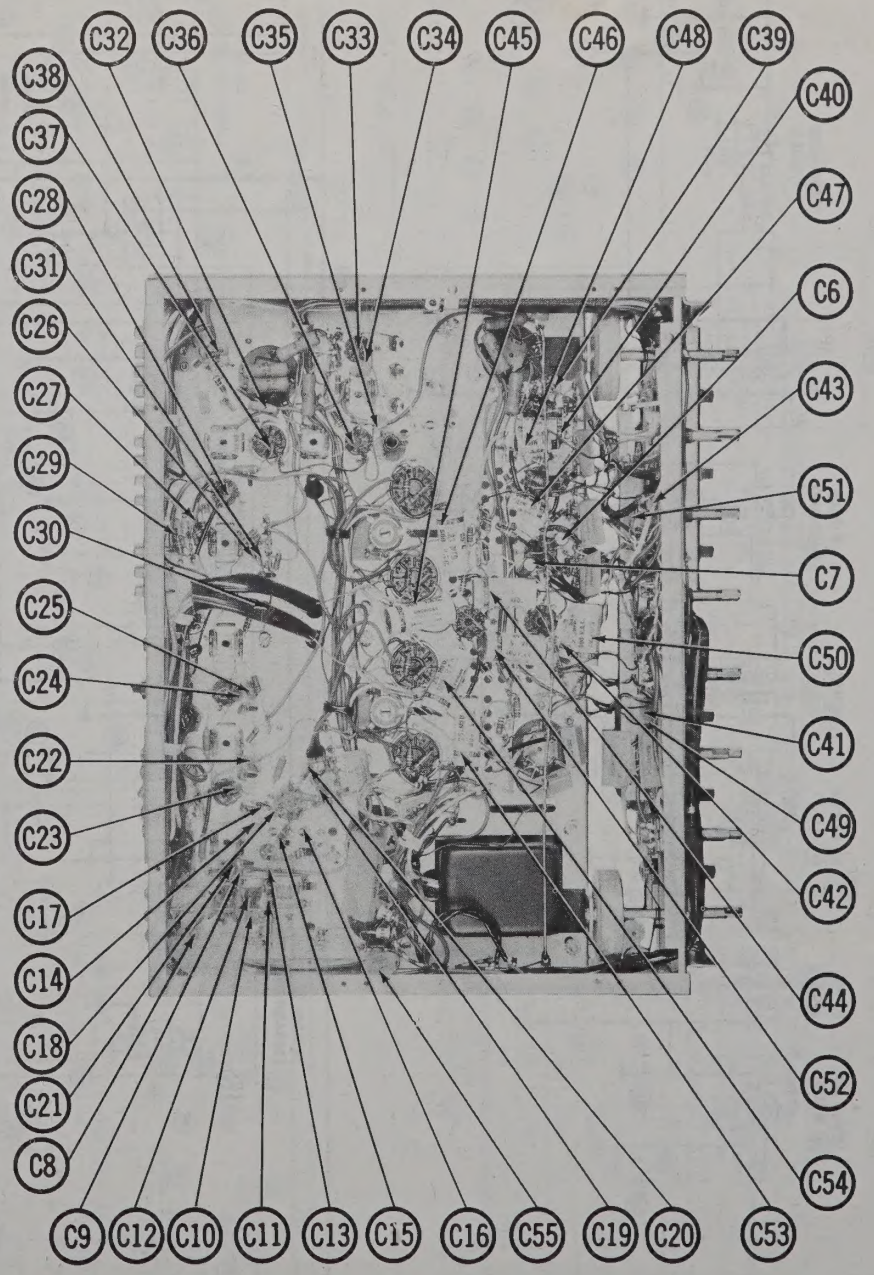
| ITEM No. | RATING CAP. | RATING VOLT. | REPLACEMENT DATA Harman-Kardon PART No. | AEROVOX PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | PYRAMID PART No. | SPRAGUE PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| C1 | 150 | 200 | JE3584176 | AFH1-31-75 | XA0266 | FP140.6 | TMS-1480 | TVL-1540 | |
| C2A | ▲200 | 200 | JE3584177 | AFH3-114-80 | XA0318 | WP132 | TMS-1490 | TVL-1547 | |
| B | ▲80 | 350 | | | BR8035 | TC80 | TD-80-350 | TVA-1716 | |
| C3A | ▲60 | 350 | JE3584178 | | C0232 | FP333.7 | TMT-3489 | TVL-3791 | |
| B | ■60 | 350 | | | BR6035 | TC795 | TD-60-350 | TVA-1613 | |
| C | ▲30 | 300 | | | | | | | |
| D | 30 | 300 | | | | | | | |
| C4A | ▲50 | 200 | JE2502988 | AFH3-25-50 | C0194 | FP327.89 | TMT-3304 | TVL-3583 | |
| B | ▲40 | 200 | | | | | | | |
| C | ■40 | 200 | | | | | | | |
| C5A | ▲200 | 100 | JE3584179 | | XB0189 | | TMD-2185 | TVLS-3402* | |
| B | ■250 | 50 | | | BR2505 | | TD-250-50 | | |
| C | ▲250 | 50 | | | | | | | |
| C6 | 50 | 6 | JE3584255 | PTT29 | NLW50-6 | TT6X50 | MLV50-6 | TE-1100 | |
| C7 | 50 | 6 | JE3584255 | PTT29 | NLW50-6 | TT6X50 | MLV50-6 | TE-1100 | |

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

## FIXED CAPACITORS

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
|---|---|---|---|---|---|---|---|---|
| C8 | .001 | | BPD-001 | DD-102 | BYA10D1 | CCD-102 | B-210 | 5HK-D10 |
| C9 | .002 | | EF-001 | MFT-1000 | | CCF-102 | CT280A | |
| C10 | 47 N750 | | N750-DI 47 | DTN-47 | C10Q47U | CCTN-470 | CN7-447 | 10TCU-Q47 |
| C11 | 2.2 10% | | NPO-SI 2.2 | TCZ-2R2 | C10V22C | CCTO-2R2 | CNO-522 | 10TCC-V22 |
| C12 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C13 | 2.2 10% | | NPO-SI 2.2 | TCZ-2R2 | C10V22C | CCTO-2R2 | CNO-522 | 10TCC-V22 |
| C14 | 1-10 | #JV20688 | | 829-10 | | | | |
| C15 | 100 N750 | | N750-DI 100 | DTN-100 | C10T1U | CCTN-101 | CN7-310 | 10TCU-T10 |
| C16 | 470 | | DI-470 | DD-471 | BYA10T47 | CCD-471 | B-347 | 10TS-T47 |
| C17 | 10 N750 | | N750-DI 10 | DTN-10 | C10Q1U | CCTN-100 | CN7-410 | 10TCU-Q10 |
| C18 | 47 N750 | | N750-DI 47 | DTN-47 | C10Q47U | CCTN-470 | CN7-447 | 10TCU-Q47 |
| C19 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C20 | 470 | | DI-470 | DD-471 | BYA10T47 | CCD-471 | B-347 | 10TS-T47 |
| C21 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C22 | .002 | | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D20 |
| C23 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C24 | .002 | Note 1 | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D20 |
| C25 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C26 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C27 | 100 N750 | | N750-DI 100 | DTN-100 | C10T1U | CCTN-101 | CN7-310 | 10TCU-T10 |
| C28 | .002 | | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D20 |
| C29 | .05 200V | | P288N-05 | DD-503 | CUB2S5 | 4DP-3-503 | GEM-415 | 2TM-S50 |
| C30 | 15 NPO 10% | | NPO-DI 15 | DTZ-15 | C10Q15C | CCTO-150 | CNO-415 | 10TCC-Q15 |
| C31 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C32 | .05 200V | | P288N-05 | DD-503 | CUB2S5 | 4DP-3-503 | GEM-415 | 2TM-S50 |
| C33 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |

# CHASSIS BOTTOM VIEW-CAPACITOR IDENT.



# ALIGNMENT INSTRUCTIONS

| ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT |
|---|
| Loudness control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.<br>Suggested Alignment Tools: A1 thru A4, A9, A11 thru A18.. GENERAL CEMENT #5097, 8727 / WALSCO #2515<br>A5, A6, A7, A19, A20, A21..... GENERAL CEMENT #5004, 5008, 5009 / WALSCO #2520<br>A8........................ GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440 / WALSCO #2526, 2543, 2544, 2545 |

AM ALIGNMENT — SELECTOR IN AM POSITION

| | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|
| 1. | High side thru .1mfd to pin 7 (grid) of AM Converter. Low side to chassis. | 455KC (400∿ 30% AM) | (AM) Tuning gang fully open. | Across voice coil. | A1, A2, A3, A4 | Adjust for maximum output. |
| 2. | High side thru 470Ω to AM antenna terminal. Low side to chassis. | 1400KC | 1400KC | " | A5, A6, A7 | " |
| 3. | " | 600KC | 600KC | " | A8, A9, A10 | Adjust for maximum output. A10 is adjusted by sliding ring along loopstick. (Recement A10). |

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM — SELECTOR IN FM POSITION

| | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|
| 4. | High side thru .01mfd to pin 7 (grid) of FM Mixer. Low side to chassis. | 10.7MC (Unmod.) | (FM) Point of non-interference. | DC probe to point Ⓐ. Common to chassis. | A11, A12, A13, A14, A15, A16 | Adjust for maximum deflection. |
| 5. | " | " | " | DC probe thru 1meg to point Ⓑ. Common to chassis. | A17 | " |
| 6. | " | " | " | DC probe to point Ⓒ. Common to chassis. | A18 | Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. |

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

| | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|
| 4. | High side thru .01mfd to pin 7 (grid) of FM Mixer. Low side to chassis. | 10.7MC (450KC Swp) | (FM) Point of non-interference. | Vert. amp. to point Ⓐ. Low side to chassis. | A11, A12, A13, A14, A15, A16 | Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. |
| 5. | " | " | " | Vert. amp. thru 47K to point Ⓑ. Low side to chassis. | A17 | " |
| 6. | " | " | " | Vert. amp. to point Ⓒ. Low side to chassis. | A18 | Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A17 for maximum amplitude and straightness of cross-over lines. |

FM RF ALIGNMENT — SELECTOR IN FM POSITION

| | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|
| 7. | Across FM antenna terminals with 150Ω in each lead. | 106MC (Unmod.) | (FM) 106MC | DC probe to point Ⓐ. Common to chassis. | A19, A20, A21 | Adjust for maximum deflection. |
| 8. | " | 90MC | 90MC | " | L5, L4, L3 | Adjust for maximum deflection by expanding or compressing coil turns. |

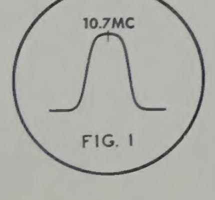


FIG. 1

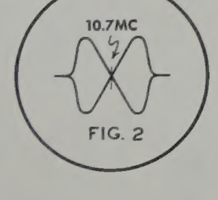
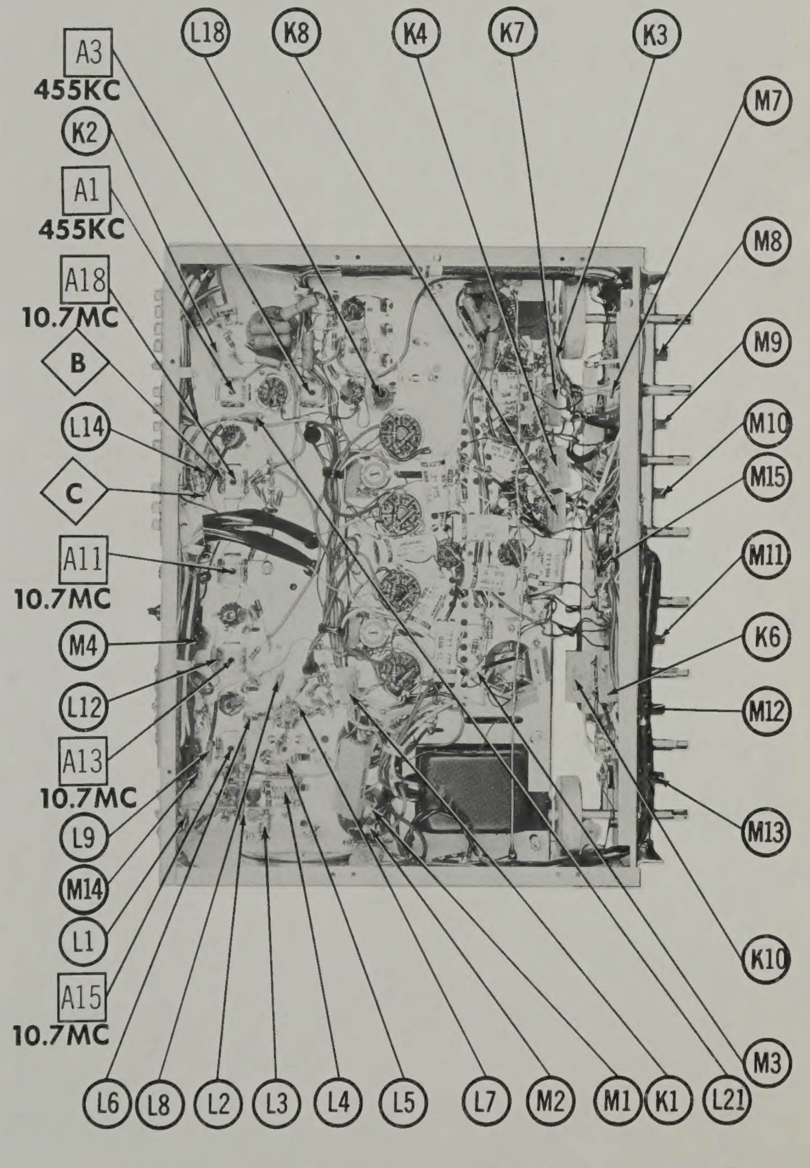


FIG. 2

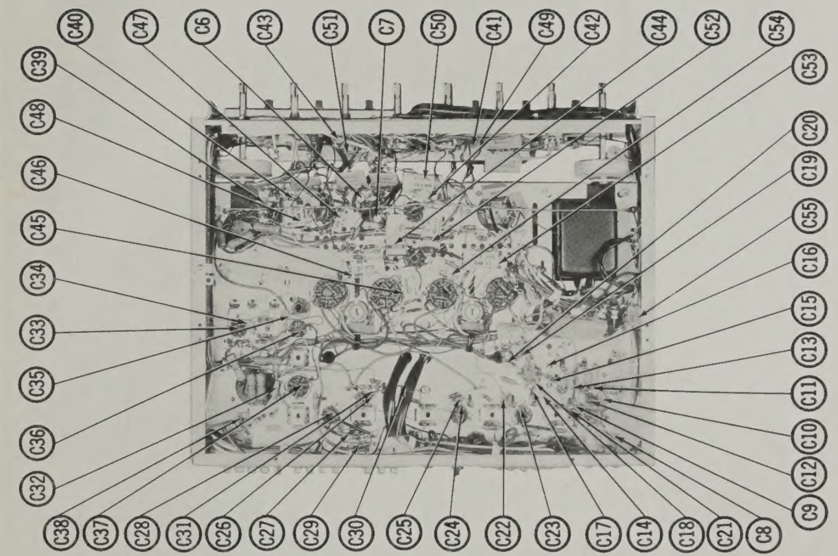




CHASSIS BOTTOM VIEW-ALIGN., INDUCTOR & MISC. IDENT.



CHASSIS BOTTOM VIEW-CAPACITOR IDENT.




# PARTS LIST AND DESCRIPTIONS

## TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

| ITEM No. | USE | TYPE |
|---|---|---|
| V1 | FM RF Amp.-FM Mixer | ECC85/6AQ8 |
| V2 | FM Osc.-FM AFC | ECC85/6AQ8 |
| V3 | 1st FM IF Amplifier | 6AU6 |
| V4 | 2nd FM IF Amplifier | 6AU6 |
| V5 | FM Tuning Indicator | EM84/6FG6 |
| V6 | FM Limiter | 6AU6 |
| V7 | Discriminator | 6AL5 |
| V8 | AM RF Amplifier | 6BA6 |
| V9 | AM Converter | 6BE6 |
| V10 | AM IF Amp.-AM Det. | 6EQ7 |
| V11 | AM Tuning Indicator | EM84/6FG6 |
| V12 | Left Channel Preamp. | ECC83/12AX7 |
| V13 | Left Channel AF Amp.-Right Channel AF Amp. | ECC83/12AX7 |
| V14 | Left Channel AF Amp.-Right Channel AF Amp. | ECC83/12AX7 |
| V15 | Left Channel Phase Inv.-Right Channel Phase Inv. | ECC82/12AU7 |
| V16 | Left Channel Output | 7355 |
| V17 | Left Channel Output | 7355 |
| V18 | Right Channel Preamp. | ECC83/12AX7 |
| V19 | Right Channel Output | 7355 |
| V20 | Right Channel Output | 7355 |

## ELECTROLYTIC CAPACITORS

| ITEM No. | RATING CAP. | RATING VOLT. | REPLACEMENT DATA Harman-Kardon PART No. | AEROVOX PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | PYRAMID PART No. | SPRAGUE PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| C1 | 150 | 200 | JE3584176 | AFH1-31-75 | XA0266 | FP140.6 | TMS-1460 | TVL-1540 | |
| C2A | ▬200 | 200 | JE3584177 | AFH3-114-80 | XA0318 | WP132 | TMS-1490 | TVL-1547 | |
| B | ▲80 | 350 | | | BR8035 | TC80 | TD-80-350 | TVA-1716 | |
| C3A | ▬60 | 350 | JE3584178 | | C0232 | FP333.7 | TMT-3489 | TVL-3791 | |
| B | ■60 | 350 | | | BR6035 | TC795 | TD-60-350 | TVA-1613 | |
| C | ▲30 | 300 | | | | | | | |
| D | 30 | 300 | | | | | | | |
| C4A | ▬50 | 200 | JE2502988 | AFH3-25-50 | C0194 | FP327.89 | TMT-3304 | TVL-3583 | |
| B | ▲40 | 200 | | | | | | | |
| C | ■40 | 200 | | | | | | | |
| C5A | ▬200 | 100 | JE3584179 | | XB0189 | | TMD-2185 | TVLS-3402• | |
| B | ■250 | 50 | | | BR2505 | | TD-250-50 | | |
| C | ▲250 | 50 | | | | | | | |
| C6 | 50 | 6 | JE3584255 | PTT29 | NLW50-6 | TT6X50 | MLV50-6 | TE-1100 | • |
| C7 | 50 | 6 | JE3584255 | PTT29 | NLW50-6 | TT6X50 | MLV50-6 | TE-1100 | |

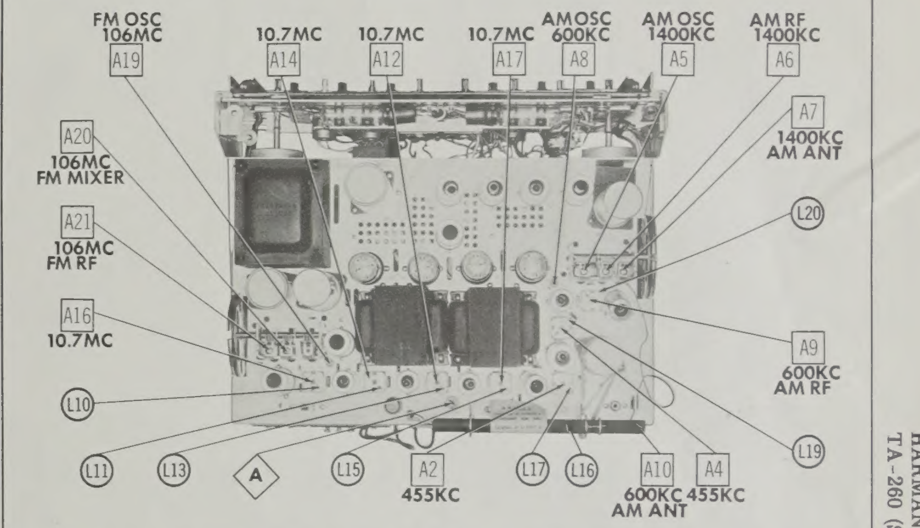
• Not normally in distributor's stock. Available thru distributor on order to manufacturer.

## FIXED CAPACITORS

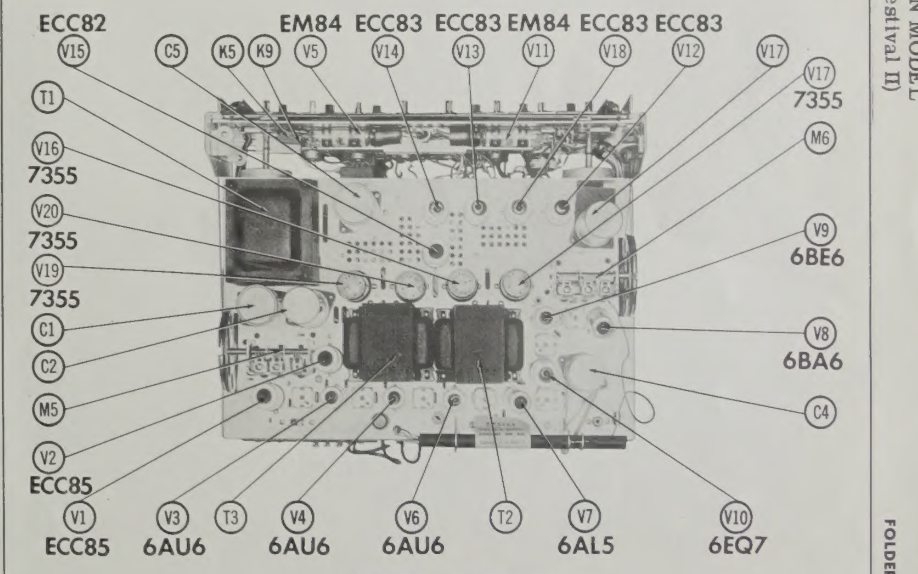
| ITEM No. | RATING | REMARKS | REPLACEMENT DATA AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
|---|---|---|---|---|---|---|---|---|
| C8 | .001 | | BPD-001 | DD-102 | BYA10D1 | CCD-102 | B-210 | 5HK-D10 |
| C9 | .002 | | EF-001 | MFT-1000 | | CCF-102 | CT280A | |
| C10 | 47 N750 | | N750-DI 47 | DTN-47 | C10Q47U | CCTN-470 | CN7-447 | 10TCU-Q47 |
| C11 | 2.2 10% | | NPO-SI 2.2 | TCZ-2R2 | C10V22C | CCTO-2R2 | CNO-522 | 10TCC-V22 |
| C12 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C13 | 2.2 10% | | NPO-SI 2.2 | TCZ-2R2 | C10V22C | CCTO-2R2 | CNO-522 | 10TCC-V22 |
| C14 | 1-10 | #JV20688 | | 829-10 | | | | |
| C15 | 100 N750 | | N750-DI 100 | DTN-100 | C10T1U | CCTN-101 | CN7-310 | 10TCU-T10 |
| C16 | 470 | | DI-470 | DD-471 | BYA10T47 | CCD-471 | B-347 | 10TS-T47 |
| C17 | 10 N750 | | N750-DI 10 | DTN-10 | C10Q1U | CCTN-100 | CN7-410 | 10TCU-Q10 |
| C18 | 47 N750 | | N750-DI 47 | DTN-47 | C10Q47U | CCTN-470 | CN7-447 | 10TCU-Q47 |
| C19 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C20 | 470 | | DI-470 | DD-471 | BYA10T47 | CCD-471 | B-347 | 10TS-T47 |
| C21 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C22 | .002 | | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D20 |
| C23 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C24 | .002 | Note 1 | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D20 |
| C25 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C26 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C27 | 100 N750 | | N750-DI 100 | DTN-100 | C10T1U | CCTN-101 | CN7-310 | 10TCU-T10 |
| C28 | .002 | | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D20 |
| C29 | .05 200V | | P288N-05 | DD-503 | CUB285 | 4DP-3-503 | GEM-415 | 2TM-S50 |
| C30 | 15 NPO 10% | | NPO-DI 15 | DTZ-15 | C10Q15C | CCTO-150 | CNO-415 | 10TCC-Q15 |
| C31 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C32 | .05 200V | | P288N-05 | DD-503 | CUB285 | 4DP-3-503 | GEM-415 | 2TM-S50 |
| C33 | .01 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |







CHASSIS TOP VIEW-ALIGN. & INDUCTOR IDENT.



CHASSIS - TOP VIEW